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THE
VETERINARY BULLETIN

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DISEASES CAUSED BY BACTERIA AND FUNGI

FEY, H. (1951). Über die Eignung menschlichen Trockenplasmas für die Koagulase-Reaktion pathogener Staphylokokken und den Einfluss verschiedener Antibiotica auf die Koagulase. **[Suitability of dry human plasma for the coagulase reaction of pathogenic staphylococci and the influence of various antibiotics on the coagulase.]**—*Schweiz. Arch. Tierheilk.* **93,** 375-389. [English, French and Italian summaries.] 3583

Dry human plasma ranks 90·6 compared with rabbit plasma 100, and 95·3 compared with fresh human plasma 100. It keeps indefinitely when dry and lasts for 16 days in solution. It compares with human plasma in the slide test. Tested with dry plasma, penicillin had no action on staphylococal coagulase. With streptomycin, two strains were coagulase-negative after 31 and 36 passages respectively; many strains showed pigment losses and changes in form. Aureomycin had no effect on coagulase formation but all strains accumulated yellow pigment during 40 passages.—K. J. SINCLAIR.

RAMON, G., RICHOU, R., JULIENNE, P., JACQUET, J. & GERBEAUX, C. (1951). Le développement de l'antitoxine staphylococcique chez les bovidés soumis aux injections d'anatoxine spécifique. **[Development of staphylococcal antitoxin in cattle injected with toxoid.]**—*Rev. Immunol. Thérap. antimicrob.* **15,** 321-335. 3584

Penicillin treatment of staphylococcal mastitis in cows does not prevent re-infections and has, moreover, undesirable consequences for cheese production. The authors, therefore, advocate immunization of cows with toxoid. The low antitoxic titre found in non-immunized cows rises considerably after four injections. It falls within some months, but can be boosted with one injection. Cows immunized during pregnancy transmit some antibodies to their new-born calves. Active immunization of the new-born calf is unsuccessful and does not even always prevent a fall in titre. Calves cannot be immunized until they are about five months old.—A. MAYR-HARTING.

WILSON, R. & COCKCROFT, W. H. (1952). **The problem of penicillin resistant staphylococcal infection.**—*Canad. med. Ass. J.* **66,** 548-551. [Abst. from authors' summary.] 3585

Carrier rates of penicillin-resistant staphylococci were considerably higher in hospital workers than in other workers. Hospital workers tend to spread institutional infections due to penicillin-resistant staphylococci. The authors discussed the problem of antibiotic resistance.

LUSH, J. L. (1950). **Inheritance of susceptibility to mastitis.**—*J. Dairy. Sci.* **33,** 121-125. 3586

This paper gives a statistical method of determining the hereditary differences in susceptibility to bovine mastitis.

The data used were those given by WARD, CASTLE *et al.* [*V.B.* **20,** 831], and consisted of an examination of 27 herds, the cows being classified as "susceptible" if they showed, at any time, clinical abnormality of udder or milk, or "resistant" in the case of cows up to eight years of age which had shown no evidence of mastitis. The scope of the work was to find whether susceptible dams have a higher percentage of susceptible daughters than the resistant dams in the same herd.

It was found that heredity plays a part in determining whether a cow develops mastitis; although a larger amount of data would have given a more accurate result. It is suggested that since daughter and dam have a

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

similar susceptibility to mastitis, culling and selection should lower the incidence of this disease.—J. E. LANCASTER.

MCEWEN, A. D. & WHITE, M. B. (1950). **Variations in the bactericidal and bacteriostatic properties of milk.**—*Vet. Rec.* **62,** 27-30. [Authors' summary copied *verbatim.*] **3587**

Following the inoculation of a quarter with saline, cultures of *Str. uberis, Str. dysgalactiae* or *Str. agalactiae* there was an increase in the number of cells in the milk, and when associated with a *Str. agalactiae* infection, clots appeared in the milk. None of the bacterial infections was permanent and the reactions caused by all of the inoculations were temporary.

The bactericidal and bacteriostatic titres of the milk were not altered by any of the reactions of the quarters to the inoculations.

The bactericidal and bacteriostatic titres of the milk of a cow remained constant from January to June and were not affected by changes in the diet.

The titres were found to fall during the drying off period when they may reach a low level.

JOHNSON, A. J. & TILLETT, W. S. (1952). **The lysis in rabbits of intravascular blood clots by the streptococcal fibrinolytic system (streptokinase).**—*J. exp. Med.* **95,** 449-465. **3588**

An active lytic system within the circulating blood stream of rabbits following the intravenous infusion of adequate doses of streptokinase was developed by the authors within 30 min. from commencing the infusion and remained present for periods ranging from 1–20 hours after ceasing the infusion. The average quantity of streptokinase necessary to effect an active lytic system was about 40,000 units per kg. per hour. Intravascular clots, induced artificially by local application of sodium morrhuate within the ear veins of rabbits, disappeared in 23 of 25 test animals (in 3–7 hours) when streptokinase was administered into the opposite ear. The toxicity of these large doses of streptococcal concentrates containing streptokinase was considerable; 8 out of 25 animals eventually died.—A. H. LINTON.

WATSON, H. C. (1952). **Herd infection with** *Vibrio foetus.* [Correspondence.]—*Vet. Rec.* **64,** 375. **3589**

V. fetus was recovered from the semen of seven out of 11 bulls in Hong Kong Dairy Farm. Six of the infected bulls had been used for artificial insemination but not for natural service.—C. C. BANNATYNE.

HUGHES, D. E. (1952). **A study of the diagnosis of bovine vibriosis with special reference to the detection of agglutinins in the vaginal secretions.**—*Thesis, Cornell.* pp. 55. **3590**

The author has attempted to evaluate the use of the vaginal secretion agglutination test for diagnosis. Agglutination tests were conducted on over 1,000 samples of vaginal secretions from over 300 animals. The methods of sampling and testing are given in detail. While vaginal titres appear to indicate a past or present infection, the specificity of these agglutinins has not been established. Data are offered to indicate that titres might be suggestive of past or present infection but that absence of titres does not indicate absence of infection. The tampon method of collecting these vaginal mucus samples seems to be useful as an adjunct to the serological agglutination test when correlated with clinical herd history and cultural studies. There is a bibliography of 105 references.—H. L. GILMAN.

MINETT, F. C. (1952). **The annual and seasonal incidence of anthrax in various countries. Climatic effects and sources of infection.**—*Bull. Off. int. Epiz.* **37,** 238-300. [In English. Author's summary modified.] **3591**

M. made a survey of the incidence of anthrax in various countries throughout the world, by years and by months, mostly over the period 1927-39. In a few cases the whole of this period could not be covered, and in others the survey was extended to include earlier or later years.

Most countries showed a decreasing and usually significant trend of infection. In Great Britain, Belgium, Holland, Denmark, Norway, Switzerland and Germany, the highest incidence was in the winter months; in other countries, except possibly Sweden, it was in the summer.

All suitable figures were subjected to statistical analysis, and reasons were sought for any important deviations from the mean.

The relationship of air temperature to incidence was examined, with particular reference to the cooler northern countries. A table of average daily maximum temperatures for a number of countries was included.

In the case of certain countries, notes were given of the regional distribution of the disease and the animal species mainly affected. With a few countries the seasonal incidence in cattle and in sheep, as well as the regional distribution within countries, were examined separately.

The source of infection, with special refer-

ence to Britain, was examined and information thereon was obtained from several countries.

In Britain, there is no correlation between anthrax and the cattle population but there are significant positive correlations between anthrax and annual imports of animal foodstuff, both in respect of total imports and most of the individual products. There are also significant positive correlations between anthrax in Britain and certain products from particular countries. With regard to imports of skins and skin products, there is a strong correlation with imports of bristles. During the period 1911-37, anthrax was over four times as prevalent in Scotland as in England, in proportion to the cattle population.

JENSEN, J. (1949). Formveränderung von Milzbrandsporen als Grundlage einer "Morphologischen Penicillinwertbestimmung". [**A method for the assessment of penicillin based on morphological changes in anthrax spores, treated with certain penicillin concentrations.**] —*Klin. Wschr.* **27**, 743-747. [Abst. from abst. in *Zbl. Bakt. I. (Ref.)* **149**, 168-169. (1951).] 3592

The penicillin assays were carried out on a slide in a serum-broth dilution series, inoculated with an anthrax spore suspension and kept in a damp chamber. Morphological changes occurred within three hours at 37°C. There was no growth at penicillin concentration of 10–2·5 I.U. per ml.; spherical forms appeared at 1·25 I.U. per ml. and predominated at 0·625–0·061 I.U. per ml.; ellipsoidal and rod-shaped forms were seen; morphological changes ceased at 0·0075 I.U. per ml.—K. J. SINCLAIR.

MEFFERD, R. B., Jr. & WYSS, O. (1951). **The mutability of *Bacillus anthracis* spores during germination.**—*J. Bact.* **61**, 357-364. [Authors' summary modified.] 3593

The results obtained were very similar to those of McElroy *et al.* (1947), who induced biochemical mutants in *Neurospora* with nitrogen mustard. With that organism the low mutation rate of old, dry conidia increased during germination, remained high through the vegetative state, and declined again as the conidia matured. These results differ from those obtained by Burkholder and Giles (1947), who reported about 3 per cent of biochemical mutants among the survivors of both vegetative cells and spores of *Bacillus subtilis* that had been subjected to a 99·9% lethal exposure to ultraviolet irradiation.

M. & W. found that early in the germination period of sporogenous bacteria the organisms became more sensitive to ultra-violet irradiation. At the same time more mutations to streptomycin resistance were induced by a radiation dose of equivalent lethality. The mutability during the period of rearrangement of nuclear material in spore germination and in spore formation did not rise above that of the vegetative population. Because of the difficulty arising from chain formation the measurements obtained on end-point mutations were not so precise as those from germinating spores. They suggested, however, that in the culture developing from irradiated spores of *B. anthracis*, delayed mutations occur just as they are found in vegetative cells.

HAILER, E. & HEICKEN, K. (1950). Untersuchungen zur Bekämpfung des gewerblichen Milzbrandes. Die keimtötende Wirkung von Natriumsulfid, Natriumhydrosulfid und Schwefelwasserstoff sowie von Kalkmilch, die mit Natriumsulfid versetzt ist, auf Milzbrandsporen bei verschiedenen Temperaturen. [**Control of industrial anthrax.**]—*Z. Hyg. Infektkr.* **131**, 219-240. 3594

The sporicidal action of sodium sulphide is caused by caustic soda formed by the action of hydrolysis on the sodium sulphide. Sodium hydrosulphide and sulphuretted hydrogen are ineffective against anthrax spores. When mixed with calcium sulphide, the sporicidal action of sodium sulphide is diminished.—W. R. BETT.

I. CHARPIN, J. (1949). L'intra-dermo-réaction finlandaise. [**The Finnish intradermal reaction.**]—*Pr. méd.* **57**, 712. 3595

II. BESSON, A. & DASSONVILLE, R. (1950). A propos de l'intradermo-réction tuberculinique dite "finlandaise". (Simplification technique; mode d'emploi; résultats.) [**The tuberculin skin test used in Finland.**]—*Bull. Acad. Méd. Paris.* **134**, 711-712. 3596

I. A note on an intradermal tuberculin reaction, which replaces the Mantoux test for use on human beings in Finland and is both simple and accurate. C. used it in 809 subjects: it was positive in 652 (80%), while the von Pirquet test was positive in 598 (73%).

II. A simplification of the tuberculin skin test described by Haahti-Savonen in Finland is described; it was used with satisfactory results in 760 children. No general reaction was noted, and the sensitivity of the test is comparable to that of the Mantoux test and of the Haahti-Savonen test, but superior to that of the von Pirquet reaction.—W. R. BETT.

SOHIER, R., TRIMBERGER, I. & JUILLARD, J. (1950). Réaction d'hémagglutination type Middlebrook-Dubos réalisée avec les hématies

humaines O et la nouvelle tuberculine I.P. 48. **[Haemagglutination reaction using tuberculin I.P. 48 and human red corpuscles.]**—*Ann. Inst. Pasteur.* 79, 347-350. 3597

The authors compared the results obtained with purified tuberculin I.P.48 and human red corpuscles and with sheep red corpuscles. The reactions were positive with sera from human beings and animals with active TB. in both methods. With sera from healthy persons or from patients free from TB. the number of positive results was less using human corpuscles than with sheep corpuscles. The authors considered this method to be comparable with, and a simplification of, the Middlebrook-Dubos technique.—W. S. MARSHALL.

PEARSON, J. K. L. (1952). **Tuberculin sensitivity in the guinea-pig as an aid to diagnosing tuberculous udder infections.**—*Vet. Rec.* 64, 113-114. 3598

G. pigs that contract TB. from the injection of infected milk react to the tuberculin test by the 21st day. This gives a useful early reading of milk tests.—G. V. LAUGIER.

RAMON, G. (1951). La lutte préventive contre la tuberculose. I. Immunité et allergie en matière de tuberculose. II. Cas particulier de la prophylaxie de la tuberculose bovine: vaccination et mesures sanitaires. **[Control of TB. I. Immunity and allergy in TB. II. Vaccination and hygienic measures in prevention of TB. in cattle.]**—*Bull. Off. int. Epiz.* 35, 113-176. 3599

I. This is a review of published work, ranging from Pasteur's views to present-day publications and concluding with a quotation from an American journal published in 1950: "At present the general use of B.C.G. vaccine for all infants, children and tuberculin-negative persons in this country does not appear to be warranted and should not be encouraged". R. makes a plea for further work to find a vaccine which is easier to prepare and use and is more effective.

II. A review of the methods of control of TB. in cattle, with special reference to the recommendations of the Office International des Épizooties in 1948 and 1950.

The reviews are documented by over 100 references.—E. G. WHITE.

GOERTTLER, V. (1951). Die epidemiologische Bedeutung der Vulvatuberkulose. **[TB. of the vulva in cows.]**—*Mh. Vet.-med.* 6, 139-141. 3600

A note on 14 cases of TB. of the vulva traced to service by a bull. There was an inflammatory condition of the penis, but no evidence was given as to its nature. G. suggested that the existing German laws relating to contagious diseases in cattle (June 26, 1909) are in need of reform.—W. R. BETT.

CECCARELLI, A. (1947). Alcune richerche sulla tubercolosi d'origine avairia nel cane. **[Avian type TB. in the dog.]**—*G. Batt. Immun.* 35, 385-400. [English, French and German summaries. Abst. from summaries.] 3601

Four healthy tuberculin-negative dogs were inoculated with 2 mg. of avian type tubercle bacilli. Moderate leucocytosis, marked lymphopenia, slight eosinophilia, and slight anaemia resulted. The erythrocyte sedimentation rate was high from the start and decreased gradually.

Avian type tubercle bacilli were sown on media containing blood from a healthy dog and also blood from a dog infected with avian type tubercle bacilli. The blood of both dogs failed to inhibit growth of the bacilli; the mixtures were then injected into two fowls which died of generalized TB. after 63 and 76 days respectively.

C. concluded that the dog has a local immunity, either in the form of tissue impermeability to the toxins of the avian type tubercle bacillus or of greater resistance to the effects of the toxin. The bacillus can remain in the dog for months without losing its virulence for the fowl.—W. R. BETT.

REILLY, L. V. (1950). **Human tuberculosis of bovine origin in Northern Ireland.**—*J. Hyg., Camb.* 48, 464-471. [Abst. from author's summary.] 3602

A survey of the extent of bovine type TB. in human beings in Northern Ireland was made from unselected material dealt with by the Central Laboratory of the Northern Ireland Tuberculosis Authority during the past five years. Only one case of bovine type pulmonary TB. was found out of more than 1,000 cases. Of a total of 371 cases (including 237 cases of tuberculous meningitis) in the non-respiratory group, 16 (including 8 cases of tuberculous meningitis) were caused by bovine type tubercle bacilli.

A marked decline in the extent of bovine type infection was shown to have occurred during the past decade. This is believed to be due to a great increase in the pasteurization of milk during this period.

STEWART, G. T. & TAMARGO-SANCHEZ, M. (1952). **An experimental basis for estimating**

the virulence of tubercle bacilli.—*J. Hyg., Camb.* **50,** 37-52. [Authors' summary copied *verbatim.*] 3603

Mice infected intracerebrally with *M. tuberculosis* H 37 Rv in doses of 400,000–1,300,000 bacillary units gave a graduated series of responses whose regression provided an arbitrary 100% standard of mouse virulence for human tubercle bacilli. Under certain experimental conditions this standard remained stable and its confidence limits could be defined. The relative virulence of other strains of tubercle bacilli could be assessed quantitatively in relation to this standard, and expressed as a (percentage) virulence ratio. 100% virulence was defined as that of a strain showing a threshold of response of 600,000–1,300,000 bacillary units, lethal cerebral lesions at 8–20 days or necrotic pulmonary lesions at 20–30 days, and a mean 50% mortality time of less than 36 days. Qualitative and quantitative responses characteristic of intermediate and very low virulence were also defined. Higher proportions of virulent cells were obtained from 3 to 7 days than from older cultures in Tween-albumin liquid media, but inocula were more suitably standardized by obtaining cells from 11 to 12-day cultures. Passage in the mouse and guinea-pig failed to alter the virulence of H 37 Rv. A slight increase was effected by passage in the lung of the rabbit. The technique employed was a measure essentially of the ability of the organism to multiply in, and damage, resistant tissues.

STEWART, G. T. (1951). **Virulence of human tubercle bacilli.**—*Lancet.* **261,** 562-566. [Author's summary modified.] 3604

A standard of virulence for human type tubercle bacilli is described in terms of responses obtained in mice infected intracerebrally with *M. tuberculosis* H37Rv. This standard provides a reference against which the relative virulence of other strains of tubercle bacilli may be tested and expressed quantitatively as their virulence ratio. Of 17 strains of tubercle bacilli recently isolated from sputum 11 were comparable to the standard both in response-dose relationship and in the character of the lesions induced in mice. Of 20 strains isolated from sources other than sputum 13 were subvirulent. Only two recently isolated test strains showed considerable (from twofold to threefold) increases in virulence over the standard. Minor increases, and well-marked degrees of subvirulence, were common.

The degree of virulence shown by recently isolated organisms may or may not be stable. With unstable strains decrease in virulence may result from storage or subculture, and increase in virulence may result from animal passage. It is possible that long sojourn in certain tissues of a resistant human host can diminish virulence, and that, in general, virulence may be modified in a given host by variations in response to inocula below a certain threshold.

The cord factor of Dubos and Bloch [see *V.B.* 22, 2362] was present in both virulent and subvirulent test strains.

No correlation was evident between the clinical severity or household spread of TB. and the virulence of the bacillus on isolation.

Even avirulent tubercle bacilli are to some extent infective to mice and other animals. Virulence is characterised by higher infectivity, together with the ability to multiply in and damage certain tissues in a resistant host.

MALONE, L., SCHURR, A., LINDH, H., MCKENZIE, D., KISER, J. S. & WILLIAMS, J. H. (1952). **The effect of pyrazinamide (aldinamide) on experimental tuberculosis in mice.**—*Amer. Rev. Tuberc.* **65,** 511-518. [French and Spanish summaries. Authors' summary modified.] 3605

A new therapeutic compound, pyrazinamide ("aldinamide") has been employed in a test for chemotherapeutic activity against TB. in intravenously infected mice. A concentration of 0·1% in the diet or 2·5 mg. per mouse per day administered subcutaneously produced a significant prolongation of survival time when measured by the time-per cent effect method of Litchfield.

A comparison was made of the results obtained in the authors' laboratory with P.A.S. and streptomycin in mice with the results obtained in other laboratories with the same drugs in order to give a better basis for judgment of the tuberculostatic activity of pyrazinamide.

SOLTYS, M. A. (1952). **An antituberculous substance in tuberculous lymph nodes.** [Correspondence.]—*Nature, Lond.* **169,** 1095. 3606

S. described the isolation from bovine tuberculous lymph nodes of a substance having an inhibitory effect on bovine and human types of tubercle bacilli. Growth of strain H37Rv on fluid media was completely inhibited at a dilution of 1:50, and partially inhibited at 1:100.

—W. R. BETT.

RUZICZKA, O. & ORTH, E. (1952). Altérations morphologiques du bacille tuberculeux consécutives à l'action de divers médicaments. Étude au microscope électronique. [**Morpho-**

logical changes in *Mycobacterium tuberculosis* produced by various therapeutic agents.]—*Ann. Inst. Pasteur.* **82,** 334-336. **3607**

The effects of streptomycin, neomycin and phenyl-*p*-amino-salicylate ("FR 7") upon the structure of tubercle bacilli were studied under the electron microscope. Each drug was placed in the centre of a plate of Hohn medium which bore a uniform inoculum of the H37Rv strain of *M. tuberculosis*. Observations were carried out on bacilli taken from the transition zone surrounding the zone of inhibition, after 6–9 days' incubation for the two antibiotics, and after seven days for "FR 7"; they are illustrated by 12 electron photomicrographs.

With all three drugs important morphological changes were seen only in the protoplasm, the capsule, where it existed, being hardly affected at all. With streptomycin and neomycin these changes were almost identical and closely resembled those seen as the result of simple aging in untreated cultures one to six months old, whereas "FR 7" had produced quite different changes, resembling those seen with *p*-acetylaminobenzaldehyde thiosemicarbazone (Tb 1).

The authors concluded that streptomycin and neomycin, on the one hand, and "FR 7" and Tb 1, on the other, do not attack the tubercle bacillus in the same phase of its metabolism, and stressed the value of combined treatment in clinical practice, in delaying or preventing the emergence of drug-resistant strains.—G. P. MARSHALL.

HARRIS-JONES, J. N. & PEIN, N. K. (1952). **Disseminated lupus erythematosus complicated by miliary tuberculosis during cortisone therapy.**—*Lancet.* **263,** 115-117. [Authors' summary and addendum copied *verbatim.*] **3608**

A woman of 36 was given cortisone for disseminated lupus erythematosus. She developed miliary tuberculosis with positive sputum and urine. She had previously been under observation for 4 years and no evidence of tuberculosis had been found at any time. It seems likely that the disease spread from a latent and unsuspected focus directly activated by cortisone. Published reports are quoted in which the use of A.C.T.H. and cortisone was followed by lung disease, which in some cases was definitely proved to be tuberculous. Since this article was submitted a similar case has been reported by Walker (1952).

LURIE, M. B., ZAPPASODI, P., CARDONA-LYNCH, E. & DANNENBERG, A. M., Jr. (1952). **The response to the intracutaneous inoculation of BCG as an index of native resistance to tuberculosis.**—*J. Immunol.* **68,** 369-387. [Authors' summary copied *verbatim.*] **3609**

The response of rabbits to the intracutaneous inoculation of BCG may serve as an index of native resistance and is useful as a method of selecting breeders of the desired resistance or susceptibility to tuberculosis. There is as yet no clear evidence that the response of human beings to the intracutaneous inoculation of BCG can serve as an index of their native resistance.

The nodule at the site of intracutaneous injection in resistant rabbits grows rapidly, reaches its peak quickly, tends to ulcerate and heals soon. In the susceptible rabbit, this nodule grows slowly, reaches its peak tardily, does not usually ulcerate and heals much later. The BCG multiplies in the skin of the resistant rabbit for a shorter time and is subsequently more rapidly destroyed than in the susceptible rabbit. The associated histological host responses are accelerated in the resistant animal. Consequently, the development of allergic sensitivity to tuberculin and antibodies are enhanced in the resistant animal. As a result of the increased rate of development of allergic sensitivity in the resistant animal, its BCG nodule is at first larger than in the susceptible rabbit.

Variations in native resistance are essentially variations in the rate of development of an increased capacity by the phagocytes to destroy tubercle bacilli.

The degree of heightened resistance conferred by a given BCG inoculation is superimposed on, and determined by, the innate resistance of the individual vaccinated, so that the resistance to the genesis of primary pulmonary tubercles in the natively resistant rabbit may be increased several fold while that of the highly susceptible rabbit is hardly affected.

BIRKHAUG, K., MCGLYNN, D. & CLARK, M. E. (1952). **Viability and dispersion of BCG inoculated subcutaneously in guinea pigs.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 64-66. [Authors' summary modified.] **3610**

Batches of B.C.G. vaccine produced in 20 consecutive weeks, when inoculated subcutaneously into normal g. pigs were each widely dispersed and remained viable at the site of inoculation and in distant lymph nodes, the spleen, liver and lungs up to six months without producing macroscopic tuberculous lesions except in the site of inoculation.

GROSSO, E. & SPECIANI, L. O. (1951). Studio delle reazioni locali (nel punto di inoculazione

e nelle linfoghiandole satelliti) nella vaccinazione con B.C.G. e con anatubercolina integrale Petragnani per via parenterale. **[Local reaction in BCG vaccination and in parenteral application of Petragnani integral anatuberculin.**—*Boll. Ist. sieroter., Milano.* **30,** 604-621. **3611**

Petragnani integral anatuberculin stimulates the tissues at the site of inoculation and those of the regional lymph nodes in the g. pig quantitatively rather than qualitatively. The stimulus provided by B.C.G. is qualitative, depending on its antigenic nature, not on the dosage.—W. R. Bett.

Hemmert-Halswick, A. & Pescatore, H. (1950). Die sogenannte Unterhauttuberkulose des Rindes. **[So-called "skin TB." in cattle.]** —*Exp. Vet.-Med.* **2,** pp. 1-40. **3612**

Fifty-six cases of "skin TB." were found in Irish cattle imported into Germany before the second world war. Three of these were tuberculous, and although *M. tuberculosis* was identified in the skin lesions of these cases, its presence was probably due to contamination of the material.

From 31 of the remainder other acid-fast organisms were identified. Six strains were obtained, two by direct culture and four by passage. All grew on Petroff or Petragnani media at an optimum temperature of 37°C. Two strains (Nos. 1116^{II} and 1666) also grew at room temperature and at 45°C. respectively.

The characteristics of the different strains were as follows:—

Strain No. 1116^{I}. The reaction of g. pigs to various doses of culture from these lesions ranged from transient thickening of the skin to large abscesses at the injection site. In one there were changes resembling those of TB. in the lungs, from which the strain was recovered. Four calves were infected by scarifying the skin, and each developed lesions. Tuberculin tests were carried out after infection. With mammalian type tuberculin reactions were weakly positive, with avian type there were negative reactions. With tuberculin prepared from the strain ('strain-specific') they were strongly positive, and with tuberculin prepared from mixed acid-fast saprophytes they were positive.

Strain No. 1183^{b} appeared to have low pathogenicity for laboratory animals and one calf.

Strain No. 1116^{II} was not pathogenic for g. pigs. Subcutaneous injection of a calf produced a transient swelling, and the organism was later recovered from the site of injection. This calf reacted positively to strain-specific and mixed saprophyte tuberculin, negatively to avian and mammalian types.

Strain No. 1295 was not pathogenic for fowls or g. pigs, and only slightly so for rabbits. Inoculation of a tuberculous calf produced a transient swelling. A second tuberculin negative calf developed a typical skin lesion after infection by scarification. Three months later it was negative to johnin, and to avian and mammalian types of tuberculin, but positive to strain-specific and mixed saprophyte tuberculins. This calf gave a doubtful reaction to mammalian type tuberculin after further inoculations.

Strain No. 1539 resembled the avian type of *M. tuberculosis* in its growth in subculture, but was not pathogenic for fowls. It reproduced "skin TB." in cattle without causing tuberculous changes of the internal organs. R and S forms were obtained. When the R form occurred in cattle the animal reacted positively to mammalian type tuberculin. If only the S form occurred, it reacted positively to avian type tuberculin.

Strain No. 1666 caused a transient swelling at the injection site in a bullock. This animal subsequently reacted positively to avian type and mixed saprophyte tuberculins. The reaction to mammalian type tuberculin was doubtful. At P.M. examination multiple small lesions were found in the liver, from which the strain was recovered.—Roy Mack.

Sigurdsson, B. (1952). **Vaccination against paratuberculosis (Johne's disease.)**—*J. Immunol.* **68,** 559-565. [Abst. from author's summary.] **3613**

A total of 289 lambs, on farms where Johne's disease of sheep was prevalent, were vaccinated over a period of three years with one or two injections of heat killed *M. johnei* suspended in mineral oil. This type of vaccine was known previously to elicit a powerful and protracted immunological response. A total of 266 lambs on the same farms were left unvaccinated as controls. During the experimental period 16 of the unvaccinated animals, but none of the vaccinated sheep, succumbed to Johne's disease. The experiment was terminated 3½ years after it was started, and the intestines of the remaining sheep were carefully searched for lesions of Johne's disease. Such lesions were found in four of the vaccinated animals but in 21 of the unvaccinated controls.

Both these differences are statistically highly significant, and it may be concluded that

under the conditions of the experiment the vaccine conferred a satisfactory resistance to subsequent infection.

HEATH, G. B. S. & BATTY, I. (1952). **An unusual diphtheroid isolated from sheep. A preliminary note.**—*Vet. Rec.* 64, 261. 3614

A diphtheroid organism which appears to be similar to, but not identical with, *Corynebacterium ovis* has been isolated from sheep in Cumberland. It has always been found in association with purulent conditions.

MORSE, E. V. & WIPF, L. (1951). **Experimental pyelonephritis in mice, rabbits, and cattle.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 89-98. 3615

An account of animal inoculations with an atypical strain (1826) of *Corynebacterium renale*. Cystitis and pyelonephritis developed in mice, cattle and a rabbit. Repeated mouse passage did not increase the pathogenicity of the strain. Goats and g. pigs were refractory.

—E. J. H. FORD.

COTTEW, G. S., SUTHERLAND, A. K. & MEEHAN, J. F. (1952). **Melioidosis in sheep in Queensland. Description of an outbreak.**—*Aust. vet. J.* 28, 113-123. 3616

The authors described an outbeak of melioidosis in sheep in north western Queensland, this being the first time that it has been reported in any species in Australia.

Over 80 sheep in a flock of 4,000 died within three months and it is presumed that the majority of these deaths were due to the disease. P.M. examinations were made on only three sheep, and from two of these *Pfeifferella whitmori* was cultivated from abscesses in the spleen and lungs. Eight sheep were infected experimentally by various routes; oral, intranasal, supraconjunctival, intramuscular and intravenous. Lesions developed in the visceral organs, abscesses or nodules in the lungs, spleen, liver and lymph nodes resembling classical melioidosis in other animals and man; suppuration and ulceration of the nasal mucosa similar to equine glanders occurred in some cases, and in others suppurative polyarthritis and meningoencephalitis. Case histories, P.M. findings, histopathology and agglutination titres of these animals were given.

No sheep had been introduced into the affected flock for two years. No evidence was obtained of the origin of the outbreak. The possible role of rats, mice and arthropod vectors in the epidemiology was discussed.

—N. WICKHAM.

LEWIS, F. A. & OLDS, R. J. (1952). **Melioidosis in sheep and a goat in North Queensland.**—*Aust. vet. J.* 28, 145-150. 3617

Pfeifferella whitmori has been isolated from two further outbreaks of disease in sheep in North Queensland. The commonest symptoms noted were coughing, respiratory distress and lameness, and at autopsy frequent findings were pleurisy, abscesses in the lungs and spleen, and joint lesions. The organism was also isolated from a generalised lymphadenitis in a goat. This is believed to be the first record of naturally occurring melioidosis in this species.

All strains of the organism produced an acute fatal disease in g. pigs and mice. Agglutination tests were successful in detecting the affected animals, and it is suggested that they may prove reliable in diagnosis of chronic cases.

—N. WICKHAM.

HUBBARD, E. D. (1952). **Hemocultures as a diagnostic aid in swine erysipelas.**—*J. Amer. vet. med. Ass.* 120, 291-292. 3618

Blood from sick pigs was added to bottles of tryptose broth which were then forwarded to the laboratory for bacteriological examination. H. recommended this procedure as an aid in the confirmation of *E. rhusiopathiae* infection in a herd.—J. T. DONE.

I. DIERNHOFER, K. & KUBIN, G. (1952). Versuche zur Impfung tuberkulöser Rinder mit Schweinerotlaufbakterien. [**Experimental inoculation of tuberculous cattle with** *Erysipelothrix rhusiopathiae* **culture.**] — *Wien. tierärztl. Mschr.* 39, 397-405. [English, French and Italian summaries.] 3619

II. SCHUH, F. & HRABIK, E. (1952). Rotlaufimpfung und Tuberkulinprobe beim Rind. [**Tuberculin test and inoculation with** *Erysipelothrix rhusiopathiae* **culture in cattle.**] —*Ibid.* 405-410. [English, French and Italian summaries.] 3620

I. Eight tuberculin-positive cattle were inoculated subcutaneously with 10 ml. of *E. rhusiopathiae* broth cultures twice with an 8-week interval. Repeated retesting after 2–7 months failed to yield a negative reaction or an alteration in the response to tuberculin. A healthy, tuberculin-negative cow was inoculated with *E. rhusiopathiae* cultures and at the same time intracheally with tubercle bacilli. The course of infection was as rapid and intense as in a control animal.

II. At 8 weeks' interval 11 cattle were twice inoculated subcutaneously with 10 ml. of *E. rhusiopathiae* culture, another 10 were given simultaneously 10 ml. of horse serum, 13 were given bovine serum simultaneously, and 8 were

given iodo-oxy-quinoline sulphonic acid-casein. All the animals were tuberculin-positive and remained tuberculin-positive when retested three and six months later. The various inoculations failed to influence the result of the intradermal tuberculin test or the course of the infection.—W. R. Bett.

Peterson, E. H. & Hymas, T. A. (1952). **Experimental and field immunization of turkeys against erysipelas.**—*Poult. Sci.* **31**, 94-98. 3621

The authors emphasised that for the immunization of turkeys against *Erysipelothrix rhusiopathiae* infection, a strain of low virulence and high antigenicity is required. With a low-virulence live vaccine they prepared, turkey poults were protected by inoculations of the vaccine, together with antiserum. 0·5 ml. of the vaccine together with the serum give stronger immunization than 0·1 ml. of the vaccine.

An account was given of the results of immunizing a flock of 5,000 turkey poults in which for three years the disease had caused losses. The results were successful.

Schneider, B. (1949). Untersuchungen über den Mechanismus der Rotlaufimmunität bei vaccinierten und mit Lebendkultur vorbehandelten Mäusen. [**The mechanism of immunity against** *E. rhusiopathiae* **infection in vaccinated mice, treated previously with live culture.**]—*Z. Hyg. InfektKr.* **130**, 67-79. 3622

Mice could be immunized against *E. rhusiopathiae* infection with concentrated formolized adsorbed vaccines. The simultaneous method with live culture and serum immunized in optimum cases at best two thirds to three quarters of the treated mice. Immunization with live attenuated bile culture was effective but often produced arthritis. The simultaneous method appeared to confer more lasting immunity than the formolized adsorbed vaccine. Phagocytosis *in vitro* could not be demonstrated in mice vaccinated with killed vaccines, but it was quite active in mice treated with live cultures especially by the simultaneous method. α-bacteriolysins could not be demonstrated in the blood of immunized mice.—W. R. Bett.

Svenkerud, R. R., Rosted, A. F. & Thorshaug, K. (1951). En lidelse hos selsom minner meget om grisens rödsyke. [**A disease of seals, similar to swine erysipelas.**]—*Nord. Vet.-Med.* **3**, 147-169. [English and German summaries. Abst. from English summary.] 3623

"Blubber finger", an infection which occurs in people who catch seals or handle seal skins, appears to resemble erysipeloid. The authors, therefore, examined a disease of seals that was also comparable to swine erysipelas. They described an aerobic Gram-positive bacillus isolated from the lesions. It was not pathogenic for pigeons or pigs.

Watt, J. A. (1951). **Bovine keratitis associated with** *Moraxella* (*Haemophilus*) *bovis*.—*Vet. Rec.* **63**, 98-99. 3624

An outbreak of keratitis in dairy cattle was described. An organism apparently identical with *Haemophilus bovis* was isolated but transmission experiments failed. Treatment with zinc sulphate was highly effective.—G. V. Laugier.

Bokhari, S. M. H. & Ørskov, F. (1952). **O-grouping of** *E. coli* **strains isolated from cases of white scours.**—*Acta path. microbiol. scand.* **30**, 87-89. [In English. Abst. from authors' summary.] 3625

Of 22 *Bact. coli* strains from 155 new-born calves that died from "white scours" 131 fell into the O group.

Cohn, E. G. (1950). Koliforme bakterier i kogødning og rå maelk. [**Coliform bacteria in faeces of cattle and in raw milk.**]—*Nord. Vet.-Med.* **2**, 209-236. [In Danish. English and German summaries. Abst. from English summary.] 3626

The large majority of micro-organisms in raw milk were found to be from the intermedius-aerogenes group; their presence in the milk was found to result from the use of unclean milking utensils. C. gave details of tests to show that *Bact. coli* does not resist drying for more than 2–3 hours and that contaminated teats were free from infection in that time.—G. V. Laugier.

Bodin, L. (1951). Traitement de la mammite colibacillaire par la streptomycine. [**Treatment of** *Bact. coli* **mastitis by streptomycin.**]—*Rec. Méd. vét.* **127**, 36-37. 3627

A note on four cases, two of which were treated successfully with streptomycin after other treatments had failed.—G. Davies.

Schalm, O. W. & Woods, G. M. (1952). **Characteristics of coliform mastitis and treatment with dihydrostreptomycin.**—*J. Amer. vet. med. Ass.* **120**, 385-388. [Authors' summary modified.] 3628

'Coliform' mastitis has been observed in a single large dairy herd from which *Streptococcus agalactiae* had been eradicated and in which mammary gland infections due to *Staphylococcus pyogenes* had been reduced from 52 per cent to 6 per cent.

Several coliform types were incriminated as causes of clinical mastitis. Included were: *Aerobacter aerogenes, Aerobacter cloacae, Escherichia coli communis, Escherichia coli communior* and, infrequently, certain intermediate coliform types.

The infections were classified as latent, chronic, acute local, and acute systemic. The acute systemic form was found to be accompanied by a rise in body temperature of 103 to 108°F. and slight to marked symptoms of toxemia. Such cases, when left untreated, generally terminated in rapid deterioration of the cow till slaughter was necessary, or death intervened.

A regimen of treatment with dihydrostreptomycin is described which, in general, has proved satisfactory in removing the infection, the milk production returning to normal.

STARR, M. P. & REYNOLDS, D. M. (1951). **Streptomycin resistance of coliform bacteria from turkeys fed streptomycin.**—*Amer. J. publ. Hlth.* **41,** 1375-1380. [Authors' summary modified.] 3629

The use of streptomycin as a growth promoting supplement in turkey poults results in the appearance within three days of streptomycin-resistant coliform bacteria. In 66% of the drug-fast strains, resistance to the antibiotic rose to 60,000 μg. per ml. The authors discussed the potential hazard to chemotherapy and public health arising from the indiscriminate use of antibiotic poultry-feed supplements.

MONTEVERDE, J. J. & GARBERS, G. V. (1950). Infecciones genitales en yeguas P. S. C. debidas a bacterias del "Grupo Klebsiella". **[Genital infection in mares with *Klebsiella* spp.]**—*Rev. Med. vet., B. Aires.* **32,** 289-291. [English summary.] 3630

An organism identified as a *Klebsiella* was isolated from the genital tract of two mares. The cultural and serological characters were described.—J. EDWARDS.

KAUFFMANN, F. (1949). **On the classification of the Enterobacteriaceae.**—*Acta path. microbiol. scand.* **26,** 879-881. [In English.] 3631

K. classified the Enterobacteriaceae into biochemical groups which he subdivided serologically into types. He advanced the hypothesis that the *Escherichia* group has developed in two directions, one towards the *Salmonella* group, the other towards the *Shigella* group.

—JAMES H. HALE.

BROOKE, M. S. (1951). **Biochemical investigations on certain urinary strains of Enterobacteriaceae: (1) *B. cloacae,* (2) "Providence."** —*Acta path. microbiol. scand.* **29,** 1-8. [In English. Abst. from author's summary.] 3632

A description of 142 Enterobacteriaceae strains, all uncapsulated, isolated from samples of urine. They fell into two biochemically nearly homogeneous groups. 108 strains belonged to the *Baci. cloacae* group and biochemically were characterized by their failure to ferment inositol and dulcitol, by their late fermentation of salicin and by their liquefaction of gelatin. The other group of 35 strains biochemically and morphologically resembled the "Providence" group described by KAUFFMANN [*V.B.* **22,** 631]. B. described the biochemical properties and morphology, the resistance to antibiotics and sulphathiazole, and the mouse pathogenicity of these strains.

COX, B. F. & CRAIG, F. R. (1952). **The effect of sulfonamides on the control of fowl typhoid in chickens.**—*J. Amer. vet. med. Ass.* **120,** 293-297. 3633

When sulphaquinoxaline, 0·0375%, was given in the drinking water to fowls, from 48–96 hours after exposure to *Salmonella gallinarum* infection and continued for seven days there was a marked reduction in the mortality from the disease.—R. MARSHALL.

BUXTON, A. (1951). **Agglutinating and non-agglutinating antibodies to *Salm. pullorum* in the sera and egg yolks of hens.**—*Off. Rep. 9th World's Poult. Congr., Paris.* **3,** 49-54. 3634

Birds with pullorum disease had similar titres of antibodies in sera and egg yolks. Those given pullorum dead vaccine other than intravenously had higher serum values than egg yolk titres, an indication that egg yolk antibodies are produced in the ovary.

—K. G. TOWERS.

GARLAND, F. W., WINTER, A. R. & AMIET, E. R. (1949). **A comparison of methods of testing turkeys for *Salmonella pullorum* infection.**—*Poult. Sci.* **28,** 63-68. 3635

Breeding turkeys were tested by tube agglutination test (at dilutions 1:25 and 1:50), by the rapid whole blood method using antigen supplied by the U.S. Bureau of Animal Health, and also using a commercially produced antigen. The tube test using complete agglutination at 1:25 as the criterion for detection of carriers compared favourably with the rapid test using the commercial antigen. *Bact. coli* infection was shown to be the cause of a positive pullorum reaction where no *S. pullorum* could be found.—D. LUKE.

ROSSI, P. (1951). Brucellose équine. Son aspect actuel; son traitement par l'antibiothérapie et par la chimiothérapie. [**Equine brucellosis.**] —*Rec. Méd. vét.* **127**, 26-35. 3636

An account of brucellosis in horses, based on a study of 118 cases of poll evil or fistulous withers (102 with titres to brucella of 1:160 or above), 84 cases of symptomless brucella infection discovered incidentally and of 48 cases of acute illness diagnosed by the agglutination test. Animals with bursitis which were negative to the test were in all cases retested 3–4 weeks later.

Br. abortus was isolated from eight of 12 closed cases of fistulous withers: agglutination tests with the cystic fluid were positive. *Actinomyces bovis* could not be detected by microscopic examination.

In the acute cases there was undulant fever, starting with a period of pyrexia of 15–20 days and then a fluctuating fever over a period of some weeks. TB. might be suspected in such cases. Animals which do not develop local lesions may find difficulty in eating from the ground. Only in ten of the 48 cases of acute illness did local lesions develop, in each case 2–3 weeks after the temperature had subsided. *Br. abortus* was isolated from the serous fluid aspirated from the inflamed bursae. When secondary infection occurred the character of the exudate changed rapidly from serous to purulent. R. considered that brucella could produce necrosis of the cervical ligament and osteitis of the vertebrae and scapula without the intervention of secondary organisms.

Treatment of acute infection in four horses by daily intravenous injections of an antibiotic 'mycoin' [a fungous product] was considered to have had some effect in reducing the fever and local symptoms. Varied results were obtained by intravenous and local injections in cases with closed local lesions. Local treatment of open cases with this product produced a marked change in the exudate, from purulent to serous, and promoted granulation. Four animals without evidence of necrosis made spectacular recovery within a fortnight: other cases recovered only after surgical treatment. The drug is recommended for closed cases as a specific and in open cases for reducing suppuration. There was some improvement in two cases treated with iodides (*Actinomyces bovis* not detected, but recorded by American workers) and fontamide (*p*-aminobenzenesulphonyl thiourea). —E. G. WHITE.

SEELEMANN, M., PILZ, W. & MEYER, A. (1951). Zur Frage der sog. Persistenz der Blutreaktionen nach der Abortus Bang-Schutzimpfung. [**The duration of the agglutination reaction after immunization with Strain 19 vaccine.** — *Kieler. Milchw. Forsch.* **3**, 709-730. 3637

The systematic use of a single vaccination with Strain 19 in calves between the ages of 5 and 15 months was said to represent a safe and effective means of controlling bovine brucellosis, even in heavily infected herds. In 13 years' experience, agglutinin titres were found never to rise very high, to recede generally within 2–3 months, and only rarely were positive reactors found after 4–5 months. In the authors' experience, positive agglutinin titres never persisted for an excessively long period after vaccination. Other strains of *Br. abortus* proved less suitable for this purpose. —G. P. MARSHALL.

MUROMTSEV, S. N. (1951). [**The problem of immunity in brucellosis.**—*Veterinariya, Moscow.* **28**, No. 6. pp. 11-20. 3638

A discussion on and a constructive criticism of the present methods of diagnosis, on various aspects of epidemiology of the disease, and on control of brucellosis. M. considered that improved methods of diagnosis of the disease in its early stages and improved methods of immunization are required.—F.A.A.

DONATIEN, A. & GAYOT, G. (1950). La leptospirose bovine en Algérie. [**Bovine leptospirosis in Algeria.**]—*Arch. Inst. Pasteur Alger.* **28**, 339-344. 3639

An account of the lesions in the kidneys and liver of a bovine animal in Algeria with leptospirosis accompanied by jaundice and haemoglobinuria.—H. PLATT.

WEISSFLOG, H. (1952). Untersuchungen über das Vorkommen von Leptospirose bei Katzen im Gebiet der Hansestadt Hamburg. [*Leptospira* **infection in cats in Hamburg.**]—*Berl. Münch. tierärztl. Wschr.* **65**, 124-126. 3640

All blood agglutination-lysis tests on serum from 165 cats in Hamburg (with living leptospira cultures) were negative. No organisms could be found on dark-field examination of kidney smears or in the urine. Spermatozoa present in the bladder urine of males were noticed to have changed their shape, size, and movements so as strikingly to resemble leptospira. Their presence in the bladder could not be explained. It is concluded that there is little or no leptospirosis among cats in Hamburg and that risk of infection of human beings by cats is negligible.—W. R. BETT.

SCHULZE, W. & STUBENRAUCH, M. (1950). Zur Behandlung der Kaninchenspirochätose mit einem öligen Wismutpräparat. [**Treatment of spirochaete infection in rabbits with a bismuth preparation suspended in oil.**]—*Berl. Münch. tierärztl. Wschr.* No. 1. pp. 13-14. 3641

Five hundred rabbits with *Spirochaeta cuniculi* infection were treated effectively with neosalvarsan (neoarsphenamine); necrosis or abscess formation occurred at the site of injection in 3% of cases. Solusalvarsan was used on some additional animals and did not produce such local reaction. 4-keto-3-acetylaminophenylarsinic acid did not affect a cure. 'Wismusan-oleosum', a highly dispersed oily solution of bismuth subsalicylate containing 0·05 g. per ml. of Bi, was given to 129 rabbits in weekly injections of 1 ml.; 50 were cured after a single injection, but 14% showed no improvement after three injections. The drug did not cause reactions, but was less reliable than neosalvarsan.—NESTA DEAN.

RAYNAUD, M. (1951). Extraction de la toxine tétanique à partir des corps microbiens. [**Extraction of tetanus toxin from** *Clostridium tetani.*] — *Ann. Inst. Pasteur.* **80,** 356-377. 3642

Tetanus toxin could be obtained from carefully washed cultures by hypertonic saline-citrate and by ultrasonic treatment. The significance of this finding was discussed.

—E. G. WHITE.

PIAT, B.-L. (1950). Un cas de botulisme chez le chien. [**Botulism in a dog.**]—*Bull. Soc. Sci. vét. Lyon.* **52,** 48-50. 3643

A clinical account of illness in a dog diagnosed as botulism. It was stated that Dr. J. C. Levaditi, Pasteur Institute, Paris, confirmed the diagnosis although bacteriological examination had not been made.—G. DAVIES.

MOLL, T. & BRANDLY, C. A. (1951). **Botulism in the mouse, mink, and ferret with special reference to susceptibility and pathological alterations.**—*Amer. J. vet. Res.* **12,** 355-363. [Authors' conclusions modified.] 3644

Purified toxins of both Types A and B of *Clostridium botulinum* are quite stable at a temperature of 4°C., when kept in glass rubber-stoppered bottles in the dark.

Both the mink and ferret are susceptible to the A and B types of toxin; the mink is relatively much more resistant to type A than to type B toxin by way of the oral route, while the mouse and the ferret are both equally susceptible to the two types of toxin *per os.*

Fasting, extremes of environmental temperature, as well as reduced stomach acidity have not been found in these experiments to favor the action of the toxin.

Poisoning with Type A and B toxin causes congestion of the spleen and necrosis in the centre of the splenic follicles, follicular hyperplasia of mononuclear cells, disarrangement of reticulum, and the appearance of relatively numerous multinuclear giant cells as the poisoning progresses.

BOROFF, D. A., RAYNAUD, M. & PRÉVOT, A. R. (1952). **Studies of toxin of** *Clostridium botulinum* **type D.**—*J. Immunol.* **68,** 503-511. [Abst. from authors' summary.] 3645

Cl. botulinum type D toxin may be obtained directly from washed organisms and resembles the toxin of these organisms found in culture filtrates. By the method employed the toxin of *Cl. botulinum* type D is obtainable in colloid (insoluble at pH 7) and soluble forms. The soluble toxin (exotoxin) may be split off the colloidal particle by the action of ultrasonic waves in the presence of catalase. The colloidal toxin is probably the precursor of the soluble form.

Additional evidence is offered for the hypothesis that the so-called exotoxin of *Cl. botulinum* is a part of the bacterial cytoplasm and is liberated when the bacteria autolyse.

PAPANDREA, E. (1950). Sulla terapia della zoppina delle pecore. [**The therapy of foot rot in sheep.**]—*Zooprofilassi.* **5,** 241-243. 3646

An account of the treatment of 500 sheep with foot rot, using a proprietary preparation containing colloidal sulphur, carbazole and sodium soap. The results were stated to be good.—G. P. MARSHALL.

EIELAND, E. & FAANES, T. (1950). Actinomyces necrophorus-infeksjon hos smågriser og forsøk med sulfamethazinbehandling. [**Treatment with sulphamethazine of** *Fusiformis necrophorus* **infection in piglets.**]—*Nord. Vet.-Med.* **2,** 204-208. [English and German summaries. Abst. from English summary.] 3647

An account of the treatment of week-old piglets with a necrotic ulceration of the snout due to *F. necrophorus.* Three piglets so treated recovered, while 17 out of 20 untreated piglets died within 3–4 weeks. The lesions prevented the piglets from sucking.—N. DEAN.

BLAXLAND, J. D. (1951). **The causes of epidemic outbreaks of moniliasis in turkeys.**—*Off. Rep. 9th World's Poult. Congr., Paris.* **3,** 21-27. 3648

B. doubts whether *Candida albicans* is the

primary cause of moniliasis as the organism was found to be widespread in both normal and diseased poultry, while the disease was reproduced experimentally only with difficulty.

—E. A. GIBSON.

SALVIN, S. B. (1952). **Endotoxin in pathogenic fungi.**—*J. Immunol.* **69,** 89-99. [Author's summary modified.] **3649**

Twenty-one-day-old female Swiss mice could be killed within 48 hours by intraperitoneal injection of a suspension of dead yeast cells of *Candida albicans,* especially when an adjuvant such as 1–2 mg. dried tubercle bacilli was added to each dose. This toxic effect was produced by all of six isolates of *C. albicans,* by isolates of six additional species of *Candida,* and by an isolate of each of nine additional pathogenic genera. Intraperitoneal injection of the living cells of each of the six additional species of *Candida* with adjuvant produced death in 21-day-old mice. The virulence of a given isolate was not necessarily related to its toxicity. Soluble endotoxin was prepared from the yeast cells of *C. albicans* and *Blastomyces dermatitidis.*

ROBINSON, J. W. & KOTCHER, E. (1951). **Histoplasmosis survey of dogs in Louisville, Kentucky.**—*Publ. Hlth Rep., Wash.* **66,** 1533-1537. **3650**

In a series of 303 dogs obtained from the Louisville dog pound, direct microscopic examination of bone marrow smears and spleen impressions and cultural examination of these tissues failed to reveal *H. capsulatum.* Human cases of the disease occur in the area. It is possible that dogs are merely coincidental hosts of the parasite, but the finding of infected dogs in Lexington, Kentucky by another author and the case records of persons closely associated with dogs suggest that the possible danger to man cannot be entirely disregarded.

—E. G. WHITE.

PRIOR, J. A. & COLE, C. R. (1951). **Studies on the communicability of histoplasmosis.**—*Amer. Rev. Tuberc.* **63,** 538-546. [French and Spanish summaries. Authors' summary modified.] **3651**

Three of five dogs placed in contact with eight dogs naturally infected with *H. capsulatum* developed the infection. Each of these three dogs which had given negative reactions to the histoplasmin skin test before exposure to infected animals developed histoplasmin reactivity within 2–5 months after exposure began. This finding is in accord with the previous reports indicating the specificity of the histoplasmin skin test in the detection of active canine histoplasmosis.

No evidence of histoplasmosis was found in two dogs which were exposed to the animals with spontaneous disease as well as to nine dogs with artificially induced histoplasmosis.

Five dogs that lived in a kennel with a dog found to have active histoplasmosis showed no evidence of the disease.

In a group of 25 human household contacts of dogs with active histoplasmosis, there was no indication that any had the active disease. Moreover, there was no evidence that any of the eight laboratory workers and assistants who did work on the material concerned or had the handling and care of the dogs had active histoplasmosis as a result of their prolonged exposure to dogs with both naturally occurring and artificially induced histoplasmosis, although five gave positive skin reactions.

Although no evidence in this study was found suggesting the transmission of canine histoplasmosis to man, its communicability from dog to dog was established. The possibility still remains that histoplasmosis may be transmitted from animals to man, but it has not yet been possible to demonstrate any direct relationship between canine and human histoplasmosis.

Although no proof of a causal relationship could be shown to exist between the disease in dogs and man, the dog should be considered a potentially dangerous source of *H. capsulatum* because it is stated to have been demonstrated (by Cole, Prior, Cross and Chamberlain in unpublished work) that the fungus can be disseminated *via* (a) sputum; (b) saliva or vomitus; (c) faeces; and (d) urine.

NICKERSON, W. J. (1951). **Physiological causes of morphogenesis in animal disease fungi.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13,** 140-145. **3652**

Certain strains of *Blastomyces* develop the yeast phase *in vitro* at 37°C., but remain purely mycelial at 25°C., independent of nutritional factors. With *Candida* and *Histoplasma capsulatum* sulphydryl groups are essential, and temperature less important, for the maintenance of the yeast phase. Two strains of *Trichophyton* grown in shake cultures developed mycelial forms in the submerged regions and sporulating forms in the upper aerated regions. Enzymatic studies revealed no striking differences between the two forms.—N. DEAN.

ROBINSON, V. B. & SCHELL, F. G. (1951). **Blastomycosis in a dog. Case report.**—*N. Amer. Vet.* **32,** 555-558. [Abst. from authors' summary.] **3653**

A case of spontaneous pulmonary blastomycosis in a dog was reported, and the literature relative to the disease in animals was briefly discussed. The histopathology of the tissues available from the case was described. This appears to be the eighth naturally occurring case of blastomycosis in a dog to be reported. It is not likely that the disease is as rare in dogs as the scarcity of recorded cases would indicate. Increased attention toward the existence of the disease in animals will probably result in the recognition of an increased number of cases. The dog may thus be established as an important reservoir for both human and animal infection. It was suggested that the organism was *B. dermatitidis*.

NORDÉN, Å. (1951). **Sporotrichosis. Clinical and laboratory features and a serologic study in experimental animals and humans.**—*Acta path. microbiol. scand.* Suppl. No. 89. pp. 119. [In English.] 3654

A general account of sporotrichosis in human beings. Studies were made of the agglutination, complement-fixation and precipitin tests for diagnosis.—W. R. BETT.

DE ALMEIDA, F., DA SILVA, A. C., BRANDÃO, C. H., MONTEIRO, E. L. & MOURA, R. A. (1950). Saprofitismo do *Microsporum canis*. em gatos. **[Saprophytism of *Microsporum canis* on cats.]**—*Rev. Inst. Lutz.* **10,** 49-52. [Abst. in *Bull. Hyg., Lond.* **27,** 433. (1952), copied *verbatim*. Signed: J. T. DUNCAN.] 3655

Cats developed cutaneous lesions, indicating lowered resistance to infection, when placed on a deficient diet consisting of casein, gelatin, sugar, almond oil, "Sais IV" and filter paper, supplemented every second day by various vitamins, cabbage seed and cod-liver oil. The administration of 5 gm. of sulphaguanadine per kilo. of body weight led to aggravation of the lesions by suppressing the production of folic acid by the intestinal bacteria. When the deficient diet was replaced by a rich diet consisting of liver, lean meat, potato, sardines, oatmeal, cod-liver oil and bone meal, the animals were restored to normal health and the skin lesions resolved completely without local treatment.

When cats infected with *Microsporum canis* were placed on the deficient diet the ringworm lesions increased, but a change to the rich diet brought about an apparent clinical cure although not necessarily a radical cure. In this connexion there is no reference to the use of Wood's lamp to detect the fluorescent (infected) hairs which would persist after an incomplete cure. When the "cured" animals were placed on the deficient diet, the ringworm lesions recurred, but "cure" again followed the return to the rich diet. From this observation the authors apparently conclude that the fungus survived as a saprophyte on the clinically cured animal, although they do not record the finding of the saprophytic form of the fungus.

Cats, while on the deficient diet, lost their sexual activity and the authors compare the state of these animals to that of the young sexually immature animal which is highly susceptible to particular fungus infections.

MARPLES, M. J. (1951). **Some observations on the occurrence and clinical course of tinea capitis and corporis in Otago.**—*N.Z. med. J.* **50,** 460-479. 3656

Of 200 human patients with tinea capitis and 136 with tinea corporis, 132 had had contact with cats, ten with dogs and four with calves. Of 20 cats in which evidence of infection was obtainable ten were examined by Wood's light and cultures of *Microsporum canis* were obtained. Of seven other cats examined two were treated with iodine and one with phenyl mercuric nitrate 1:1500 and all three were cured in 2–4 weeks; in two kept untreated there was progressive improvement and diminution of fluorescence under Wood's light, but shorter palely fluorescent hairs yielded cultures and the cats remained carriers two months after apparent clinical cure. M. considers this carrier stage in cats to be an important source of infection for children. The only two dogs examined were found to be infected with *M. canis* and two of the four calves yielded cultures of *Trichophyton*. Twenty-one g. pigs were infected by scarification.—F.E.W.

TOMLINSON, N., CAMPBELL, J. J. R. & TRUSSELL, P. C. (1951). **The influence of zinc, iron, copper and manganese on the production of citric acid by *Aspergillus niger*. II. Evidence for the essential nature of copper and manganese.**—*J. Bact.* **61,** 17-25. [Authors' summary copied *verbatim*.] 3657

When *Aspergillus niger* 72-4 was grown from conidia in stationary surface culture for the purpose of producing citric acid from sucrose, traces of zinc, iron, manganese, and copper had to be added in order to obtain high yields of the acid. Omission of any of the trace elements caused a marked reduction in acid formation. Omitting zinc caused a 96 per cent decrease, iron a 91 per cent decrease, manganese a 44 per cent decrease, and copper a 76 per cent decrease.

When sucrose was purified by cation exchange treatment, the yield of acid with the

purified sucrose, even when optimum concentrations of zinc, iron, manganese, and copper were present, was 17 per cent lower than with unpurified sucrose. This indicates that some additional factor is essential for high acid production.

VAN DEN AKKER, S. (1952). Een schimmelinfectie (Cephalosporium potronii in de mondholte van een kat. [*C. potronii* **infection in the mouth of a cat.**]—*Tijdschr. Diergeneesk.* **77,** 515-516. [Abst. from English summary.] **3658**

The author described a tumour-like condition on the ventral side of the tongue of a cat, caused by *C. potronii.* Two photomicrographs of the lesion are reproduced.

PRUNIER. (1952). Une thérapeutique nouvelle dans la lutte contre la péripneumonie bovine. [**Treatment of bovine contagious pleuropneumonia.**]—*Rev. Path. comp.* **52,** 83-87. **3659**

Both affected cattle and contacts, in all about 3,000 head, were treated with intravenous injections of a colloidal solution prepared by mixing 1% copper sulphate with 0·1% lime water, and removing the upper third of the supernatant fluid after the precipitate had settled. P. stated that in this way spread of the disease was prevented and that 90% of the affected cattle were cured. He discussed the mode of action of the drug. The basis for estimation of the results was apparently purely clinical and over a period of only about a year.
—A. MAYR-HARTING.

MOIR, R. J. & MASSON, M. J. (1952). **An illustrated scheme for the microscopic identification of the rumen micro-organisms of sheep.** —*J. Path. Bact.* **64,** 343-350. [Authors' summary slightly modified.] **3660**

The micro-organisms of the rumen of the sheep, other than the ciliates, have been described in terms of their morphology, their staining reactions and ability to synthesise iodine-reacting polysaccharide. From the data so collected a scheme of identification has been prepared.

PETERS, D. & WIGAND, R. (1951). Zur Morphologie und Klassifizierung von *Eperythrozoon coccoides.* [**The morphology and classification of** *Eperythrozoon coccoides.*]—*Z. Naturforsch.* **6b,** 326-333. **3661**

Mouse blood containing *Eperythrozoon coccoides* was examined by different methods *viz* electron microscopy, by phase contrast and dark and light field microscopy.

The parasites appeared coccoid in fresh preparations and as rings in smears. Under the electron microscope the former were $0{\cdot}48 \pm 0{\cdot}08\mu$ in diameter and the latter $0{\cdot}57 \pm 0{\cdot}1\mu$, and using light ground and phase contrast the sizes were of the same order. The ratio of rings to cocci was closely dependent upon the method of preparation, haemolysis producing swelling, and osmic acid or formalin fixation, shrinkage. Morphologically and biologically the organisms show great similarity with *Bartonella muris.*—M. L. CLARKE.

WIGAND, R. & PETERS, D. (1952). Blutparasiten der weissen Maus. I. Studien über Eperythrozoon coccoides Schilling, Dinger. [**Blood parasites of white mice. I.** *Eperythrozoon coccoides.*]—*Z. Tropenmed. u. Parasit.* **3,** 461-472. [English summary modified.] **3662**

E. coccoides, an erythrocytic parasite of white mice, was studied in 220 animals. The incubation period generally lasted 1–6 days; parasites were found to be most numerous 3–7 days after splenectomy. Protracted infections were observed up to 42 days with parasite counts shifting in undulant curves. Following artificial infection parasites were mostly found to be more numerous than after splenectomy, numbers being lowest during relapses. There were strains of mice naturally free from eperythrozoa, while in some mice that had not been splenectomized the parasites were scanty. In microscopically negative mice a latent infection could be proved by blood transmission to other animals. Splenectomized Syrian golden hamsters and rats were also susceptible to infection. Unlike mice, neosalvarsan-treated hamsters resisted re-infection. Eperythrozoa showed up as rings in Giemsa-stained slides, and by phase contrast and electron microscopy (replica technique. Coccoid parasite forms were also seen. Formation of annular particles seems to depend on environment and takes place only during the process of drying. Other irregular forms must be considered artificial and caused by decay under desiccation. Neither membranes nor differentiation of internal structure are seen in eperythrozoa. In this respect they resemble *Bartonella muris* and are dissimilar from bacteria, *B. bacilliformis,* rickettsia and large viruses. Besides neosalvarsan, aureomycin was therapeutically effective in a single subcutaneous dose of 5 mg.; chloromycetin in similar dosage had no effect.

See also absts. **3830-3831** (*Bact. lactis aerogenes*); **3837** (*Staph. aureus*); **3864** (bacteriology of meat and meat products); **3865** (enrichment media for *Salmonella* organisms); **3867** (food poisoning); **3868** (staphylococcal food poisoning); **3869** (*S. typhi-murium* infection from duck eggs); **3917** (streptococcal mastitis); **3918** (Gram stain); **3919** (*M. tuberculosis*); **3920** (Dubos' medium); **3921** (identification of *Salmonella* and *Shigella* organisms); **3922** (differentiation of *Brucella*); **3933** (report, Union of South Africa), **3934** (report, Tanganyika Territory); **3935** (report, F.A.O.); **3936** (report, U.S.A.); **3937** (book annual review of microbiology).

DISEASES CAUSED BY PROTOZOAN PARASITES

I. ROUBAUD, E., MAILLOT, L. & RAGEAU, J. (1952). Infection naturelle de *Glossina caliginea* dans les gîtes à palétuviers de Douala (Cameroun français). [*G. caliginea* **naturally infected with** *Trypanosoma vivax* **and** *T. congolense*.]—*Bull. Soc. Path. éxot.* **45**, 206-208. 3663

II. ROUBAUD, E. & MAILLOT, L. (1952). Les modalités de l'infection cyclique trypanosomienne observées chez les *Glossina caliginea* des gîtes à palétuviers de Douala. [**Cyclical infection of** *G. caliginea* **with trypanosomes.**] *Ibid.* 228-235. 3664

I. *G. caliginea* taken during the dry season contained fewer trypanosomes than did the flies captured during the rains. *T. vivax* predominated, *T. congolense* being practically non-existent during the dry season.

II. Atypical or regressive infections with *T. vivax* and *T. congolense* as indicated by transverse sections of the proboscis of the fly, were noted and they were probably related to climatic conditions. The regressive infections were commonest during wet weather.

—JAS. G. O'SULLIVAN.

MULLIGAN, H. W. (1951). **Tolerance of indigenous West African cattle to trypanosomiasis.** —*Bull. Bur. interafr. Tsetse. Int. sci. Comm. Trypanosomiasis Res. Works and Final Report of the 3rd Session held at Bobo-Dioulasso Upper Volta* 11-16*th June* 1951. B.P.I.T.T. No. 164/0. pp. 4. [Mimeographed.] [Author's summary copied *verbatim*.] 3665

Of 8 Ndama cattle, four have remained apparently free from trypanosome infection and all have survived a challenge from riverine tsetse which was sufficient to cause a mortality of 75% in Zebu cattle and 33% in Zebu × Ndama crosses maintained under identical conditions for a period of 320 days. It appears, therefore, that Ndama cattle are not only less liable to show trypanosomes in their blood but are less susceptible to their pathogenic effects than either Zebus or Zebu × Ndama cross-breds. The fact that these Ndama cattle, in common with the other two groups, were experiencing their first exposure to infection with local strains of trypanosomes (though not necessarily their first exposure to other strains) suggests that their resistance is non-specific. Of the other two groups maintained in the same locality under identical conditions for the same period of time, the Zebu × Ndama cross-breds ultimately became infected to the same extent as the Zebus, but they withstood the effects of infection to a much greater extent.

The greater resistance of Ndama cattle to infection with trypanosomes, and to the pathogenic effects of such infections, was further demonstrated by their survival, in good condition, for 188 days when exposed to a challenge from *G. morsitans* which was sufficient to cause a mortality of 66% of Ndama × Zebu cross-breds within the same period, and which, in another experiment, had caused 100% mortality among Zebu cattle within a shorter period, in the same locality. Thereafter the Ndama cattle survived a trek of approximately 100 miles from the experimental area, although with some loss of condition.

The evidence available suggests that the resistance or tolerance of Ndama cattle to trypanosomiasis is natural rather than acquired. If it were acquired it would be expected that it would be specific whereas the indications are that it is non-specific. Furthermore, the fact that Ndama × Zebu crosses are more resistant than Zebus and less resistant than pure Ndamas supports this view.

Since there appears to be strong support for a policy of exploiting Ndama cattle in certain regions of the British West African Colonies, the results of this preliminary experiment are sufficiently encouraging to warrant a much fuller investigation of the nature and specificity of the relative tolerance of this breed of cattle to trypanosomiasis.

I. FIENNES, R. N. T.-W.- (1951). **Cryptic infections in cattle trypanosomiasis—a preliminary report.**—*Bull. Bur. interafr. Tsetse. Int. sci. Comm. Trypanosomiasis Res. Works and Final Report of the 3rd Session held at Bobo-Dioulasso Upper Volta,* 11-16*th June* 1951. B.P.I.T.T. No. 155/0. pp. 3. [Mimeographed.] 3666

II. FIENNES, R. N. T.-W.- (1952). **The cattle trypanosomiases. A cryptic focus of parasites in association with a secondary stage of disease.**—*Brit. Vet. J.* **108**, 298-306. [Author's summary copied *verbatim*.] 3667

I. A preliminary report of work dealt with in more detail later (see II below).

II. An extensive parasitic involvement of the heart has been discovered in cattle suffering from a secondary stage of trypanosomiasis. The majority of the parasites were degenerate or lysed forms, but normal trypanosomes were also present. Such foci of trypanosomes were discovered in the heart of one animal which had been removed from contact with tsetse flies over a year previously and which had only shown a positive blood or gland smear on one occasion.

In another animal they were also found, although parasites had only been seen in a gland smear on two consecutive days in six months, and then only in very small numbers. Severe lesions were found in the heart in association with both normal and lysed trypanosomes, which appeared to be the direct cause of the lesions.

It is suggested that the cardiac lesions may be the underlying cause of the pathological state associated with this secondary stage of trypanosomiasis of cattle.

FIENNES, R. N. T.-W.- (1952). **Antrycide and the future of trypanosomiasis of cattle.**—*Vet. Rec.* **64**, 423-425. 3668

The author reviewed the results of three years' work on the application of antrycide for the control of trypanosomiasis of cattle. It was observed that the prophylaxis afforded by antrycide was not a sterile immunity but a suppression of the disease. Resistance to antrycide could be induced in *T. congolense* and *T. vivax*, but the suppression of the disease by the drug made the danger of spreading drug-fast trypanosomes remote. F. gave details of an experiment in which a natural resistance to trypanosomiasis was induced by rearing calves from dams, protected by antrycide, in a tsetse area.

—D. W. JOLLY.

DAVEY, D. G. (1951). **"Antrycide"—A summary of information.**—*Bull. Bur. interafr. Tsetse.* B.P.I.T.T. No. 131/0. pp. 17. [Mimeographed.] 3669

Antrycide was effective against various trypanosomes. The chloride was less toxic but more liable to cause development of resistance than the methyl sulphate. Prophylactic use of the drug was successful.—R. MARSHALL.

ANDRIANNE, V. F. (1952). Contribution à l'étude de l'action curative et prophylactique de l'antrycide dans les trypanosomiases à *Trypanosoma congolense* et à *Trypanosoma vivax* des bovidés. [**The curative action of antrycide in *T. congolense* and *T. vivax* infections in cattle.**]—*Ann. Soc. belge Méd. trop.* **32**, 1-10. 3670

The curative and prophylactic actions and low toxicity of antrycide methylsulphate, antrycide dichloride and antrycide "pro-salt" (a mixture of the methyl sulphate and the chloride) were confirmed in further tests in the Belgian Congo.—N. DEAN.

UNSWORTH, K. & BIRKETT, J. D. (1952). **The use of antrycide pro-salt in protecting cattle against trypanosomiasis when in transit through tsetse areas.**—*Vet. Rec.* **64**, 351-353. [Authors' summary modified.] 3671

An account is given of an attempt to protect trade cattle, in transit through tsetse areas in Nigeria, against infection with trypanosomiasis, by the use of antrycide pro-salt (a mixture of the methyl sulphate and the chloride in proportion 1 : 5). A single inoculation of 15 ml. per 300 kg. afforded complete protection against trypanosomiasis for 59 days to cattle travelling on the hoof through areas heavily infested with *G. morsitans*, together with some riverine tsetse (*G. palpalis* and *G. tachinoides*). All untreated cattle which travelled with the treated animals became infected and two died of trypanosomiasis by the 45th day of the trek. It is shown that while the untreated cattle lost an average of 13 kg. weight on the journey, the treated cattle gained an average of 11 kg.

UNSWORTH, K. (1952). **An outbreak of *T. simiae* infection in pigs in Nigeria and its attempted control using antrycide methyl sulphate.**—*Vet. Rec.* **64**, 353-354. [Author's summary copied *verbatim*.] 3672

The history of an outbreak of *T. simiae* infection of pigs in Nigeria has been described. Evidence is produced which suggests that the disease, introduced initially by *G. palpalis*, was later spread mainly through the agency of mechanical vectors. It has been shown that both antimosan and antrycide methyl sulphate were ineffective in controlling infections with this strain of *T. simiae* of pigs.

LAUNOY, L. & JEANPIERRE, Cl. (1948). Suite à l'étude de l'action préventive du diamidino-diphénoxypentane administré *per os*, sur la trypanosomose expérimentale à *Trypanosoma equiperdum* du rat. [**Further study of the preventive activity of diamidino-diphenoxypentane given *per os* against experimental *T. equiperdum* infection in rats.**]—*Bull. Soc. Path. exot.* **41**, 168-172. 3673

Single doses of 10 mg. of diamidino-diphenoxypentane (pentamidine) per 100 g. body weight conferred an immunity lasting about five days. The majority of the animals had a prolonged incubation period, but were susceptible to subcutaneous doses of 1 mg. Two oral doses of 10 mg. per 100 g., separated by four days, were ineffective against a chance infection 24 days later. Three oral doses at 4–5 day intervals following the effect of the initial dose caused a characteristic reaction and a resistant state in 60% of the cases. The administration of six doses, in two sets of three separated by ten days, in the middle of which a second infec-

tion was superimposed, gave a highly resistant state four days after the last dose.

—MALCOLM WOODBINE.

BAETEN, O. (1951). **Note on the use of dimidium chloride in the trypanosomiasis of bovines.**—*Bull Bur. interafr. Tsetse*, B.P.I.T.T. No. 153/T. pp. 8. [Mimeographed.] 3674

Two batches of dimidium chloride were tested in infected cattle; one was more effective as a trypanocide and there were fewer relapses than when the other batch was used. Some photosensitization occurred especially in young animals and at the end of the rainy season. Permanent cure was achieved more easily in young than in full grown animals.

—R. MARSHALL.

RODRIGUEZ, I. G. (1951). Algunas consideraciones acerca de las piroplasmosis del ganado bovino español. [**Bovine piroplasmosis in Spain.**]—*Bol. Inf. Col. Vet. Esp. Supl. cient.* **5**, 295-304. 3675

R. classified the bovine piroplasms which have been recognized to date in Spain. He discussed the relationship of resistance to breed and general health; he noted a relative susceptibility of Friesian cattle.—J. T. DONE.

DONATIEN, A. (1952). A propos de la vaccination prémunitive contre l'anaplasmose bovine. [**Immunization against bovine anaplasmosis.**]—*Arch. Inst. Pasteur Algér.* **30**, 44-46. 3676

Inoculation of cows with *A. centrale* caused serious decrease in milk yield. Immunization, without this defect, was obtained by inoculating calves at six months of age.

—JAS. G. O'SULLIVAN.

RANQUINI, J. H. (1951). La toxoplasmosis en los animales domésticos. [**Toxoplasmosis in domestic animals.**]—*Bol. Inf. Col. Vet. Esp., Supl. cient.* **5**, 181-187. 3677

Toxoplasmosis as seen in dogs, g. pigs and rabbits, was dealt with briefly, the bulk of the work consisting of a review of laboratory methods for the diagnosis of infection.

—J. T. DONE.

FARRELL, R. L., DOCTON, F. L., CHAMBERLAIN, D. M. & COLE, C. R. (1952). **Toxoplasmosis. I. *Toxoplasma* isolated from swine.**—*Amer. J. vet. Res.* **13**, 181-185. 3678

The authors reported the isolation of *Toxoplasma* from swine for the first time.

The parasites were observed microscopically in the pulmonary, lymphatic, intestinal and hepatic lesions of eight pigs obtained from a farm with a history of recurrent undiagnosed disease extending over many years. Isolations were made from the pooled liver and spleen of one pig and from the heart of another by mouse inoculation.

The porcine strain of *Toxoplasma* was indistinguishable morphologically, serologically and in its pathogenicity for experimental animals from those of human and canine origin.

—J. T. DONE.

HÉRIN, V. V. (1952). Note sur l'existence de la globidiose bovine au Ruanda-Urundi. [*Globidium besnoiti* **infection in cattle.**]—*Ann. Soc. belge Méd. trop.* **32**, 155-159. [Flemish summary.] 3679

The author described *G. besnoiti* infection in cattle as it occurs in the Ruanda-Urundi Territories, where about 2% of the cattle are affected. Scleroderma is the main symptom. The causal agent has been demonstrated in skin serosity. Intravenous injections of 1% formalin or Lugol's solution were of some value in treatment.—J.D.

See also absts. **3923** (staining of trypanosomes and plasmodia); **3931** (report, Union of South Africa); **3932** (report, Tanganyika Territory); **3934** (report, F.A.O.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ANON. (1952). **Foot and mouth disease outbreak.** [In Canada.]—*Canad. J. comp. Med.* **16**, Facing p. 159. 3680

A note by the Health of Animals Division tracing the course of an outbreak of F. & M. disease in Saskatchewan in chronological order. The infection was apparently introduced by a German immigrant on Nov. 2nd, 1951 to the farm of Mr. X. Five calves were sold Nov. 22nd to a feed lot in Regina. Cattle on farm X were noted to be ill Nov. 26th. On Dec. 1st, it was agreed the condition was vesicular stomatitis. A horse inoculated developed what were believed to be lesions. Two adjoining farms became infected. The owners had assisted Mr. X in treatment of his animals. The disease also appeared in the feed lot. This was later declared free from disease and quarantine discontinued on Jan. 26th. About this time the infection appeared in a number of herds. It was later shown that another person had worked on farm X, leaving there Nov. 26th and being employed by a large dairy on Nov. 29th. The infection broke out there on Dec. 15th and rapidly spread through the whole dairy herd. On Feb. 18th a quarantine area was established

and destruction and burial of animals was commenced after a diagnosis of F. & M. disease had been made. This work was completed on the 14th March. [Canada was declared free from F. & M. disease on the 19th August 1952.]
—R. GWATKIN.

UBERTINI, B. (1951). Osservazioni e studi sui virus della febbre aftosa che hanno parassitato la pianura Padana nell'ultimo decennio. **[Studies on the virus of foot and mouth disease in Italy during the last decade.]**—*Clin. vet., Milano.* **74,** 97-108. **3681**

From field and laboratory observations, U. concluded that variants of a type of virus have a different antigenic structure, as shown by immunological methods; they also differ in antigenic value, as shown by the protective effectiveness of specific hyperimmune g. pig sera. Complement fixation cannot give information on the infectivity of a virus preparation. U. reported two new variants, one of the "A" type, and the other of the "C" type.
—M. BERTANI.

PYL, G. (1951). Der Einfluss der Lipoide auf das neurotrope Maul- und Klauenseuchevirus. **[Effect of lipoids on the neurotropic foot and mouth disease virus.]**—*Exp. Vet.-Med.* **3,** pp. 79-83. **3682**

F. & M. disease virus recovered from the brains of infected mice has different properties depending upon whether it is freed or not from brain lipoids. Several examples in physical and biochemical behaviour are given.
—J. EDWARDS.

CIACCIO, G. & ERCOLI, N. (1951). Studi sperimentali sull'infezione da virus dell'afta epizootica. **[Experimental study on foot and mouth disease.]**—*Boll. Ist. sieroter., Milano.* **30,** 533-542. [English summary modified.] **3683**

An experimental dermotropic infection with F. & M. disease virus, suitable for chemotherapeutic purposes, has been quantitatively studied. Data concerning virulence for g. pigs and appearance of the primary and secondary dermal lesions—in function of the inoculum—were presented.

In neutralization tests *in vitro* penicillin, chloromycetin, acriflavine and colchicine were found inactive. Terramycin inhibited the virus, but this might possibly depend on pH (5) variations. High concentrations of Aralene (7-chloro-4 (4-diethylamino-1 methylbutylamino) quinoline phosphate) decreased the virulence of the neutralization mixture, without completely inactivating the virus.

A definite neutralizing effect has been obtained with certain triphenylmethane—Malachite Green, Methylgreen—and Toluidin Blue, Pyronin and Janus Green, a basic azo dye.

By local treatment terramycin and chloromycetin were ineffective.

Systemic treatment with chloromycetin, acriflavine, toluidin blue and aralene was ineffective.

Terramycin (total dose 1 g. per kg.) interfered with the appearance of the dermal manifestations, without destroying the inoculated virus; (this was demonstrated by animal passages).

Tolerated doses of Malachite Green (tetramethyl 4, 4′diamino triphenyl methane) gives a definite delay of the infection, with a certain number of negative cases. This effect is more visible with low viral inocula.

MORHART, H. (1952). Dalbeen bei Maul- und Klauenseuche. **[Treatment of foot and mouth disease with "dalbeen" a preparation containing hexamethylene tetramine.]**—*Tierärztl. Umsch.* **7,** 94-95. **3684**

M. claimed that early subcutaneous injection of 15–20 ml. of "dalbeen" (containing hexamethylene tetramine iodosalicylate, proteins and manganese peroxide) prevented loss or damage in infected cattle and pigs.
—G. P. MARSHALL.

BRANDLY, C. A., HANSON, R. P. & CHOW, T. L. (1951). **Vesicular stomatitis with particular reference to the 1949 Wisconsin epizoötic.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 61-70. **3685**

In the autumn of 1949 an outbreak of vesicular stomatitis was reported in ten counties of Wisconsin and later in Minnesota and over the Canadian border. Herd incidence varied from 1–90% and case incidence within herds from 5–90% with an average of 30%. Cattle over one year old and horses were affected and a number of cases in man were suspected. In cattle, mouth, foot and teat lesions occurred with loss of flesh and milk yield; the use of mild antiseptic applications was followed by slow recovery. Spread was by contact with the possible addition of an insect vector. Laboratory tests showed the outbreak to be a New Jersey strain of virus.
—E. J. H. FORD.

FORGEOT, P. (1948). Vaccination contre les ultra-virus par virus tués. **[Immunization by killed virus.]**—*Bull. Acad. vét. Fr.* **21,** 203-206. **3686**

Evidence that killed virus vaccines can confer immunity was reviewed. Reference was

made to work on the viruses of F. & M. disease, herpes, vaccinia, Rift Valley fever, equine encephalitis, psittacosis and rinderpest. The immunization is generally weak, but may be prolonged.—N. DEAN.

PELLEGRINI, D. (1951). La sensibilità dello scoiattolo (Xerus erythropus) alla rabbia. **[Susceptibility of the squirrel** (*Xerus erythropus*) **to rabies.]**—*Profilassi.* **24,** 75-78. **3687**

A study on the susceptibility of the squirrel to experimental infection with rabies virus. Because of the brief incubation period, the uniformity of symptoms, and great production of Negri bodies, the squirrel can be considered an excellent laboratory animal for work on rabies. —M. BERTANI.

JONNESCO, D. & STAMATESCO, S. (1948). L'action antibiotique de culture du bacille mésentérique sur le virus rabique fixe. **[The antibiotic effect of a culture of** *Bacillus mesentericus* **on the fixed virus of rabies.]**—*Arch. Roumaines Path. exp. Microbiol.* **15,** 302-304. **3688**

Filtrates of a broth culture of *B. mesentericus* proved viricidal. They lost this property after 23 days from the date of preparation. —G. P. MARSHALL.

HOFFMANN, F. (1951). Praktische Erfahrungen mit dem Schafpockenimpfstoff Phylaxovina. **[Trials of a sheep-pox vaccine.]**—*Acta vet. hung.* **1,** 23-27. [In German, Russian summary.] **3689**

When used in over 10,000 sheep, this vaccine completely protected healthy flocks and considerably lowered both morbidity and mortality in affected flocks.—G. P. MARSHALL.

CAIRNS, H. J. F. (1951). **Protection by receptor-destroying enzyme against infection with a neurotropic variant of influenza virus.** [Correspondence.]—*Nature, Lond.* **168,** 335. **3690**

C. reported that after treating mice with an intracerebral injection of the receptor destroying enzyme of *Vibrio cholerae* death from infection with a neurotropic strain of influenza virus was prevented. The protection was accompanied by a loss of haemagglutination inhibitor in the brain and after a peak period about the fourth day haemagglutination inhibitor level and susceptibility both gradually returned to normal.—K. G. TOWERS.

YAMAMOTO, S., ISHIDA, K., OKUZAWA, H., SAHARA, Y., FUJIWARA, K. & TSUBAHARA, H. (1950). **[Studies on Japanese encephalitis in cattle.]**—*Jap. J. vet. Sci.* **12,** 37-50. [Abst. from English summary.] **3691**

An account of a small outbreak of Japanese B encephalitis involving four indigenous cattle in a village in the Ibaraki prefecture in the summer of 1948, during the period of maximum incidence of the disease in horses and in human beings. The clinical symptoms resembled those in horses. One cow died and the virus was isolated from the cerebrospinal fluid by inoculation of mice. Neutralization tests on the convalescent sera of the other three animals about two months later gave a positive index; they had given negative reactions three days after infection. The symptoms, lesions and histological findings were described. An unusual feature was pronounced neuronophagia in the large nerve cells of the hippocampus; this had not been seen in equine cases.

SHWARTZMAN, G. & FISHER, A. (1952). **Alteration of experimental poliomyelitis infection in the Syrian hamster with the aid of cortisone.** —*J. exp. Med.* **95,** 347-362. [Abst. from authors' summary.] **3692**

In Syrian hamsters infected with poliomyelitis virus, a single injection of 2–3 mg. cortisone increased the severity of symptoms, shortened incubation time, markedly reduced survival time and increased mortality rate. There was a reciprocal relation between the dose of cortisone and the amount of virus necessary to produce symptoms. A 2 log increase in the concentration of virus occurred in cortisone-treated animals. Desoxycorticosterone acetate, progesterone, stilboestrol and A.C.T.H. did not influence the infection.—N. DEAN.

BLANC, G. & BRUNEAU, J. (1951). Comportement du virus de la chorioméningite chez le lapine en gestation. **[Behaviour of the chorio-meningitis virus in the pregnant rabbit.]**—*C. R. Acad. Sci., Paris.* **233,** 1704-1705. **3693**

Although not directly pathogenic for the rabbit, choriomeningitis virus inoculated intramuscularly into rabbits on the first to the tenth day of gestation developed in the implanted ovum, in which it produced an intense inflammatory reaction.—CLIVE BRIGGS.

BLANC, G. (1952). Comportement du virus de la chorioméningite chez la lapine en gestation. **[Effect of choriomeningitis virus on the pregnant rabbit.]**—*Maroc méd.* **31,** 204-205. **3694**

B. reported further experiments [see also preceding abst.] to determine more exactly the mechanism of the virus action. Virulent blood from g. pigs was diluted 1:100 with distilled water and 2 ml. of this solution injected into

the thigh muscles of rabbits in various stages of pregnancy. To follow the evolution of the reaction provoked by the virus an exploratory laparotomy was made at the time of injection; this also allowed a judgment to be made of the state of gravidity of the uterus. Four to six days later another laparotomy was made and the embryo removed, ground up in physiological saline and injected into g. pigs. Other g. pigs were injected with blood from the same rabbits. It was found that up to the tenth day, and particularly between the seventh and tenth days, the virus developed in the embryonic tissues. It killed the embryo and caused intense fibrous reaction of the uterine wall. Ova removed four days after inoculation were enlarged and contained, instead of an embryo, a mass of reactionary tissue which at later stages was progressively absorbed and disappeared within 4–6 days. The virus was present in this tissue. If the virus was inoculated after the tenth day it had no action on embyro or uterus although detectable in both. It could also be detected in, but had no action on, a non-gravid uterus. It is probable that other viruses though nonpathogenic for a given species may react in the same way on embryonic tissues.—R. G. MARES.

AFZELIUS-ALM, L. (1951). **Aseptic (non-bacterial) encephalomeningitides in Gothenburg 1932-1950. Clinical and experimental investigation with special reference to the viruses of herpes, influenza, mumps and lymphocytic choriomeningitis.**—*Acta med. scand.* Suppl. No. 263. pp. 99. [In English.] 3695

An infective agent from human brain material from two cases of encephalomeningitis was isolated by intracerebral injection into mice in which it caused rolling disease and hydrocephalus. On three occasions the ectromelia virus was isolated from mice which had been used for blind passages in attempts to isolate virus from human brain material.

—W. R. BETT.

I. SMITHBURN, K. C. (1952). **Studies on certain viruses isolated in the tropics of Africa and South America. Immunological reactions as determined by cross-neutralization tests.**—*J. Immunol.* **68,** 441-460. [Author's summary modified. Part of discussion copied *verbatim.*] 3696

II. KERR, J. A. (1952). **Studies on certain viruses isolated in the tropics of Africa and South America. Immunological reactions as determined by cross complement-fixation tests.**—*Ibid.* 461-472. [Author's summary modified.] 3697

III. TAYLOR, R. M. (1952). **Studies on certain viruses isolated in the tropics of Africa and South America: their growth and behavior in the embryonated hen egg.**—*Ibid.* 473-493. [Author's summary copied *verbatim.*] 3698

I. Seventeen strains of viruses isolated in Africa and South America, all of them neurotropic for Swiss mice, were submitted to immunological investigation by means of cross-neutralization tests, along with a group of 12 previously known viruses having similar neurotropic properties. The results show that: (1) Eleven of the viruses are distinct from each other and from all the agents of the comparison group. These 11 appear, therefore, to be hitherto unknown. They include: Bwamba fever, West Nile, Semliki Forest, Ntaya, Bunyamwera, Uganda S, Zika, Anopheles A, Anopheles B, Wyeomyia and Ilhéus viruses. (2) The Kumba virus, isolated in West Africa, is identical with the Semliki Forest virus, previously isolated in Uganda. (3) Of 5 viruses originally encountered in the Passos area in Brazil, one, designated Heterogeneous virus, has apparently been lost, and the remaining 4 appear to be members of the group (GVDII and FA types) of mouse encephalomyelitis viruses. These are the strains designated Haemagogus A, Sabethes, Leucocelaenus and Haemagogus B. (4) Unilateral or nonreciprocal cross-reactions may occur between viruses which are not identical. Limited investigations of such unilateral reactions are reported and discussed. Previous investigations showing a close relationship between Mengo and encephalomyocarditis viruses and between Russian spring-summer encephalitis and louping ill viruses are confirmed. The importance which attaches to the several viruses included in this study remains, for the most part, to be discovered. It is possible that some of them may not attack human beings at all, but may be the causative agents of diseases of wild animals in Africa or South America. It is also possible that the geographic distribution of some of them may be so limited that, even though they attack human beings, they may be only of local importance. However, it is certain that at least one of the agents has a very wide geographic distribution, although its importance to man is not yet clearly understood.

II. Noninfectious, lipid-extracted, complement-fixing antigens, which were satisfactory for use with specific antisera prepared in guinea pigs and mice, have been made from the brains of mice infected with 27 different viruses or strains of virus. Lipids were extracted either by means of the acetone-ether extraction technique of Casals, or, in the case of 5 viruses,

with benzene. There were no failures to secure an antigen when an attempt was made to do so. The sera used in this study were all obtained from guinea pigs and mice, no attempt having been made to examine human sera for the presence of complement-fixing antibody to any of the viruses under investigation.

The following viruses gave no cross-reactions and are considered to be distinct entities: Bwamba, Bunyamwera, Zika, Wyeomyia, Anopheles A and Anopheles B. Kumba virus is considered to be merely a strain of Semliki virus. Neither of these 2 viruses gave any other cross reactions. West Nile virus in these tests gave no cross reactions, but there was no reason to doubt the validity of cross reactions previously observed by others. Mengo virus gave no cross reactions with any of the other viruses studied, except for a one-way cross with several strains of the GDVII type of mouse encephalomyelitis—that is, by use of Mengo antiserum and GDVII type antigens. Uganda S and yellow fever gave irregular, one-way cross reactions, as did Ntaya and Ilhéus. Four viruses, namely Haemagogus A, Haemagogus B, Leucocelaenus and Sabethes, are shown to be strains of the GDVII type of mouse encephalomyelitis.

III. Propagation in embryonated hen egg of Ntaya, Bunyamwera, Bwamba, Uganda S, Zika, Anopheles B, Haemagogus A and B, Leucocelaenus, Sabethes and Wyeomyia viruses is reported, and the propagation in the same medium of Semliki, Mengo, West Nile, Anopheles A and Ilhéus viruses by other investigators is confirmed.

With the exception of Wyeomyia, all of the viruses grew readily and could be maintained in serial passage by yolk sac inoculation using a suspension of the brain or body of the embryo for passage material. However, it was necessary to initiate cultivation of Anopheles B virus by intracerebral inoculation. The Wyeomyia virus was carried through 10 brain-to-brain passages in the embryo and was then lost. It was not infectious to embryos when inoculated by other routes.

The multiplication of the viruses, their fatality to embryos and the gross lesions they produce when introduced into yolk, allantoic and amniotic sacs and when dropped upon the chorioallantoic membrane are described. With the exception of Wyeomyia virus and initiation of the cultivation of Anopheles B virus, inoculations into the yolk and amniotic sacs proved to be the most favorable routes for consistently infecting the embryo.

After 3 to 10 pasages in the embryo, the majority of the viruses were found to be capable of infecting embryos when introduced into the yolk sac in dilutions as high as or higher than those required to produce a fatal infection in mice.

Only 4 of the viruses (Semliki, Mengo, West Nile and Ntaya) were consistently fatal to the embryos in high dilutions.

Ntaya, Bunyamwera, Bwamba, Uganda S, Anopheles A and B and Ilhéus viruses exhibited neurotropism when inoculated into the yolk sac, in that greater concentrations of the infecting agent were observed in the brain than in the body of the embryo.

Semliki, Mengo, West Nile and Zika viruses may be regarded as pantropic, as the virus concentrations in the body were equal to if not greater than those in the brain of infected embryos.

Haemagogus A and B, Leucocelaenus and Sabethes viruses were consistently found in greater concentrations in the body of the embryo than in the brain. They also exhibited other characteristics in common with each other and with FA mouse encephalitis virus.

The implications of these observations upon the use of the embryonated egg for the primary isolation of viruses of this category have been briefly discussed.

FASTIER, L. B. (1952). **Toxic manifestations in rabbits and mice associated with the virus of Western equine encephalomyelitis.**—*J. Immunol.* **68,** 531-541. [Author's summary slightly modified.] **3699**

Animals inoculated with high concentrations of the Western equine encephalomyelitis virus exhibited well-defined toxic manifestations directly referable to the virus particle. The toxin resembled those of other toxigenic viruses in producing a febrile reaction and associated leucopenia after the intravenous inoculation of rabbits. Mice inoculated by the same route died within two days with gross necrotic lesions in the liver. There was no evidence that significant viral multiplication was associated with these latter changes. The toxin, relatively stable at 4°C., was destroyed at 56°C. for 30 min. (a procedure simultaneously effecting a ten-thousandfold reduction in the intracerebral infectivity titre). Neutralization of virus infectivity by specific antiserum also abolished clinical evidence of toxicity.

The above results have been incorporated in a discussion on the relationship between viral toxicity and the normal infective process of the same virus.

GILMAN, A. R. (1952). **Plasma protein changes in equine infectious anemia.**—*Amer. J. vet. Res.* **13**, 83-89. 3700

A marked drop in serum albumin and slight rise in serum globulin resulted; the cephalin-cholesterol flocculation test became positive in acute cases and the thymol turbidity test became positive in peracute cases. The sedimentation rate of red blood cells was not affected; the reticulo-endothelial system was notably affected.—R. MARSHALL.

WALTHER. (1952). Auffällige Sehstörungen bei Bornascher Krankheit des Pferdes. [**Impaired vision in Borna disease.**]—*Dtsch. tierärztl. Wschr.* **59**, 88. 3701

Impairment of vision appears frequently in horses with Borna disease. On histological examination it is found to be caused by a non-purulent retinitis and inflammation of the optic nerves.—CHARLOTTE M. WOOD.

MARCQUÉ, P. & FALLEY, K. (1950). Remarques sur la vaccination à l'aide du vaccin capripestique. [**Goat-adapted rinderpest virus vaccine, use on calves at time of weaning and curative properties.**]—*Rev. Élev. Méd. vét. Pays trop.* **4**, 169-170. 3702

Immunization of the dam confers protection on calves until they are weaned, when a further vaccination is necessary. The vaccine is also curative.—N. DEAN.

LEVADITI, C. & VAISMAN, A. (1951). Le vaccin jennérien appartient-il au groupe des virus réellement neurotropes? [**Does vaccinia belong to the group of neurotropic viruses?**]—*Rev. Immunol. Thérap. antimicrob.* **15**, 158-172. 3703

If vaccinia vaccine, adapted to the rabbit testicle, is injected intracranially into new-born mice, the animals die within a few days and histological examination reveals degeneration of the nerve cells. If the vaccine is injected into adult mice, only the tissues of the mesoderm are damaged. The virus content of the brain is higher than that of blood and organs. Of two vaccinia strains, taken direct from calves, one only proved neurotropic in new-born mice.
—A. MAYR-HARTING.

DURAN-REYNOLS, F. & DURAN-REYNOLS, M. L. (1952). **Inactivation of vaccine virus by preparations of hyaluronic acid with or without hyaluronidase: experiments on cell cultures.** —*Science.* **115**, 40-41. 3704

Preliminary experiments indicate that hyaluronic acid and other polysaccharides such as are formed by disintegration of tissue substance during infection act to inactivate vaccinia virus and other infecting agents.
—N. DEAN.

MCKERCHER, D. G. (1952). **A virus possibly related to the psittacosis-lymphogranuloma-pneumonitis group causing a pneumonia in sheep.**—*Science.* **115**, 543-545. 3705

A virus isolated from the lungs of sheep affected with pneumonia is believed to belong to the psittacosis-lymphogranuloma-pneumonitis group; it is not identical with the virus which causes enzootic abortion in sheep.
—G. B. S. HEATH.

I. ISAKSSON, A. (1951). Über eine schweinepestähnliche Krankheit in Berlin. [**A disease of pigs in Berlin resembling swine fever.**] *Dtsch. tierärztl. Wschr.* **58**, 330. 3706

II. HARTWIGK, H. (1952). Über Infektionsversuche mit einer von Isaksson beschriebenen schweinepestähnlichen Krankheit. [**Transmission experiments with a disease of pigs which resembled swine fever.**]—*Tierärztl. Umsch.* **7**, 116-118. 3707

I. The author described a highly contagious and fatal fever accompanied by convulsions and posterior paresis. Lymphocytic meningo-encephalitis, nephritis and hepatitis were found.

II. H. demonstrated that the disease described by Isaksson [see preceding abst.] was a modified form of swine fever. Filtrates of blood from infected pigs transmitted the infection to healthy pigs; two pigs immunized against swine fever remained healthy after inoculation with filtrates of blood from a pig with the modified form of the disease.—ROY MACK.

ABREU LOPES, J. A. (1952). Nota sôbre lesões da peste suina experimental. [**The lesions in experimental swine fever.**]—*J. Ciênc. vet., Lisboa.* **1**, 13-16. [English summary.] 3708

Observations on pigs killed for virus production 4–6 days after infection. The author was impressed by the high incidence (71%) of splenic lesions in animals killed at the 96th hour after infection.—J. T. DONE.

ZOTTNER & CHEVRIER. (1952). A propos de la peste porcine—note sur la variabilité du virus. [**Swine fever, variability of the virus.**]—*Maroc. méd.* **31**, 469-471. 3709

The authors quoted clinical impressions and a small amount of experimental evidence to show that there is at present in Morocco a highly virulent strain of swine fever differing from that previously encountered in North Africa.—J. T. DONE.

BAKER, J. A. (1951). **The new hog cholera vaccines.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee, Aug. 20-23, 1951. pp. 55-61. 3710

Details of four vaccines in the process of development were provided by the makers: (1) a live virus attenuated by alternate passage through pigs and rabbits, a single injection of the vaccine being stated to give six months' immunity; (2) a freeze dried virus attenuated by 200 rabbit passages, six months' immunity being claimed for a single injection; (3) a vaccine prepared by growing the virus on chick embryos in the presence of minced swine testicle, then in swine serum agar containing minced swine testicle and finally by rabbit passage, the vaccine being administered with a simultaneous dose of serum; (4) a vaccine prepared from virus maintained in tissue culture for six years, and at present under field trial.—E. J. H. FORD.

BETTS, A. O. & BEVERIDGE, W. I. B. (1952). **Investigations on a virus pneumonia of long duration prevalent in pigs.**—*J. Path. Bact.* **64,** 247-248. 3711

From their work to date the authors draw the following conclusions regarding the nature and behaviour of the infective agent, which, they suggest, may have affinities with psittacosis, grey lung virus of mice, pleuropneumonia-like organisms and primary atypical pneumonia of man. (1) Pigs alone are susceptible to infection. (2) The disease may be set up by inoculation of suspensions of infected lung into the nose, trachea or pleural cavity, or by exposing pigs to infective mists. Subcutaneous or intravenous inoculations have produced slight thermal reactions but never pneumonia. (3) The concentration of inoculum has no effect on the extent of the lesions produced. (4) Lesions persist for long periods with little tendency to resolution. (5) It is easier to recover the virus from old than from early lesions, and the virus may be lost if serial passage at short intervals of time is attempted. (6) symptoms are slight even in pigs in which large areas of the lungs are consolidated.—J. T. DONE.

DRÄGER, K. & SCHINDLER, R. (1951). Untersuchungen über den Wert der Komplementbindungsreaktion (KBR.) nach Laidlaw und Dunkin bei der Diagnose der Staupe und bei der Beurteilung des Schutzwertes des Staupeimmunserums. **[Complement fixation reaction in the diagnosis of dog distemper and in the evaluation of immune serum.]**—*Mh. prakt. Tierheilk.* **3,** 262-273. 3712

Complement-fixing antigens can be demonstrated in the organs of dogs and ferrets with distemper. The antigens are extracted from the ground-up organs in the refrigerator with a fourfold volume of saline, and the clear supernatant is used. In this test distemper can be distinguished from leptospirosis. Antibodies are not found with sufficient regularity in the serum of convalescents to be used for diagnosis. The antibodies to test for the presence of antigens are obtained from the serum of hyperimmunized dogs.—A. MAYR-HARTING.

BINDRICH, H. (1951). Untersuchungen über die nervöse Staupe des Hundes. **[Research on nervous distemper.]**—*Exp. Vet.-Med.* **4,** 98-115. 3713

As causes of nervous symptoms after distemper toxic, alimentary, parasitic, infectious and allergic factors have been considered. B. demonstrated the presence of the virus not only in the brain, but also in the cerebrospinal fluid of dogs with nervous distemper. The fluid, injected sub-occipitally into healthy dogs caused either nervous or catarrhal distemper, injected intramuscularly it caused typical catarrhal distemper. Immune dogs, similarly injected, remained healthy. This established that the virus itself is the direct cause of the nervous form of the disease.—A. MAYR-HARTING.

RÖHRER, H. (1951). Veränderungen im Zentralnervensystem bei experimentell erzeugter nervöser Staupe. **[Changes in the central nervous system in experimental nervous distemper.]**—*Exp. Vet.-Med.* **4,** 116-118. 3714

The symptoms of "nervous" distemper are due mainly to a leptomeningitis and congestion of the meninges. The nerve cells themselves are little affected with the exception of the cells in the hippocampus and the Purkinje cells. No changes of an encephalitic character can be seen. It may be concluded that the distemper virus has little affinity to the nervous tissue proper.—A. MAYR-HARTING.

CHRISTOPH, H.-J. (1951). Über die Anwendung des Pneumothorax bei der Staupepneumonie des Hundes. **[Pneumothorax in the treatment of distemper pneumonia of dogs.]**—*Exp. Vet.-Med.* **4,** 147-154. 3715

Artificial pneumothorax as a therapeutic measure in dogs with distemper pneumonia is successful only if the pneumonia is strictly unilateral. The healing of the pneumonia does not prevent the occurrence of nervous symptoms later.—A. MAYR-HARTING.

MCKERCHER, D. G. (1952). **Feline pneumonitis.**—*M[ich.] S[t.] C[oll.] Vet.* **12,** 66-69 & 109. 3716

The author quoted limited experiments

using kittens to show that vaccination against feline pneumonitis is effective as a prophylactic measure, and that the condition responds to aureomycin and terramycin therapeutically.

—J. T. Done.

Weidenmüller, H. (1951). Vergleichende Desinfektionsversuche mit dem Virus N und dem Virus der atypischen Geflügelpest. **[Comparative disinfection experiments with virus N (an atypical fowl plague virus) and the virus of Newcastle disease.]**—*Tierärztl. Umsch.* **6**, 407-408. 3717

Effective disinfectants, when mixed with the virus, prevented the death of chick embryos inoculated with the mixture. 2% caustic soda was most effective.—Roy Mack.

Jansen, J. (1951). **On the difference between fowl plague, Newcastle disease and duck plague.**—*Off. Rep. 9th World's Poult. Congr., Paris.* **3**, 65-68. 3718

J. recorded the appearance in Holland of fowl plague, duck plague and Newcastle disease as separate virus infections as shown by serological, cultural and pathogenicity tests.

—K. G. Towers.

Atanasiu, P. & Gareau, G. (1952). Pouvoir hémagglutinant et pouvoir infectant du virus de Newcastle avant et après la mort de l'embryon infecté. **[Haemagglutinating and infecting activity of the Newcastle disease virus before and after the death of the infected chick embryo.]**—*Ann. Inst. Pasteur.* **82**, 247-251. 3719

The authors found that the infectivity of the Newcastle disease virus reaches a maximum shortly after the death of the inoculated embryos. The haemagglutinating titre then decreases quickly if the inoculated eggs are kept at 37°C. When the eggs are then kept at +4°C., the titre increases sharply (up to seven times) up to the 65th hour.—J.D.

Wenner, H. A., Jenson, M. H. & Monley, A. (1952). **A study of infections caused by mumps and Newcastle disease viruses. I. Specific and non-specific serologic relations.** —*J. Immunol.* **68**, 343-356. 3720

Wenner, H. A., Monley, A. & Jenson, M. H. (1952). **A study of infections caused by mumps and Newcastle disease viruses. II. Some properties of specific and non-specific serum hemagglutination inhibitor components.** —*Ibid.* 357-368. [Authors' summaries modified.] 3721

I. Specific antibodies, measured by the methods of haemagglutination-inhibition and complement-fixation, appeared in serum following experimental infection of monkeys with mumps and ND viruses. It could not be demonstrated, using the two serological methods, that these viruses shared a common antigen.

The hyperimmunization of *rhesus* monkeys with mumps and ND viruses did not provide convincing evidence of a serological relationship between these viruses.

Complement-fixing antibodies for NDV may appear in serum samples obtained from some human beings recently convalescent from mumps parotitis. Haemagglutination-inhibitor substance(s) was present in many sera at the onset of mumps; although a rise in titre occurred, the order of increase was not enough to warrant a conclusion that mumps and ND viruses shared similar antigenic components.

A non-specific substance(s) has been found in many sera obtained from human beings and *rhesus* monkeys which inhibits haemagglutination of fowl erythrocytes, and in some, apparently, fixes complement in the presence of mumps and ND viruses. The non-specific serum-inhibitor is discussed in regard to the apparent, but false, serological relationship of mumps and ND viruses.

II. A component present in sera obtained from apparently healthy human beings and rhesus monkeys inhibits hemagglutination of chicken erythrocytes by mumps and Newcastle disease (ND) viruses. A similar non-specific component, which undergoes fluctuation, occurs in sera of human beings convalescent from mumps parotitis and of monkeys infected with mumps or ND viruses. Specific serum-inhibitor substance, also present following infections from these viruses, is stable. Non-specific inhibitor is partially inactivated at 62°C. for 30 min. It may be inactivated or destroyed by acetone, chloroform, trypsin, papain, and sodium periodate.

These data, among others, provide further evidence that the cross-reactions observed in haemagglutination-inhibition reactions with mumps and ND viruses and sera obtained from human beings convalescent from mumps parotitis cannot be due to corresponding antigens shared in common by these viruses.

Nelson, C. B., Pomeroy, B. S., Schrall, K., Park, W. E. & Lindeman, R. J. (1952). **An outbreak of conjunctivitis due to Newcastle disease virus (NDV) occurring in poultry workers.**—*Amer. J. publ. Hlth.* **42**, 672-678. 3722

A report of an outbreak of Newcastle

Disease virus conjunctivitis among workers employed in the evisceration of poultry at the Minnesota plant. The virus was isolated from 4 out of 10 cases selected from 40 workers suffering from conjunctivitis. The authors described procedures used in the investigation of the virus.—A. H. LINTON.

CHUTE, H. L. (1952). **A study of dead Newcastle virus vaccine.**—*Canad. J. comp. Med.* **16,** 176-180. [Abst. from author's summary.] 3723

A large commercial flock of 4,100 birds was used to test the effectiveness of a dead virus Newcastle vaccine.

Serum-neutralization tests on 56 vaccinated and 57 non-vaccinated chickens from 2–12 weeks of age revealed no evidence of immunity.

Haemagglutination-inhibition titres of vaccinated and non-vaccinated birds over a period of 12 weeks were very similar and of no significance.

No significant difference in immunity was noted between vaccinated and non-vaccinated birds between two and fourteen weeks of age exposed intratracheally and intranasally to a pathogenic strain of Newcastle disease virus.

BERGEON, P. (1952). Existence en Indochine de la conjonctivite contagieuse des ruminants. **[Infectious conjunctivitis in sheep in Indo-China.]**—*Bull. Soc. Path. éxot.* **45.** 169-172. 3724

Infectious conjunctivitis has been shown to exist in sheep in Indo-China. It behaves similarly to the infectious kerato-conjunctivitis which workers elsewhere have associated with *Rickettsia conjunctivae* and B. believes that the disease which he has discovered is also associated with a rickettsia.—G. B. S. HEATH.

I. MÜLLER, G. & BALDELLI, B. (1950). Isolamento ed identificazione di *C. burnetii* da un episodio epidemico di febbre "Q" a Chiaravalle. **[Isolation of *Rickettsia burneti* in a Q fever epidemic in Chiaravalle, Italy.]**—*Boll. Soc. ital. Biol. sper.* **26.** 679-682. 3725

II. BALDELLI, B. (1950). Isolamento ed identificazione di *C. burnetii* dal latte e dagli organi di ovini a Chiaravalle. **[Isolation of *Rickettsia burneti* from milk and organs of sheep in Chiaravalle, Italy.]**—*Ibid.* 682-685. 3726

I. A report on the isolation of *R. burneti* from the blood of two human patients. Inoculation of the blood produced a typical Q fever infection in g. pigs. Eight serial passages in g. pigs were possible. The diagnosis was confirmed by complement-fixation tests.

II. Inoculation of g. pigs with milk from a flock of sheep in Chiaravalle, a town in which an epidemic of Q fever in man had taken place, resulted in a typical Q fever infection. The diagnosis was confirmed by complement fixation, and *R. burneti* was cultivated in chick embryos. Only milk gave positive results; blood, faeces, urine, and various tissues of two sheep which were killed, were all negative.

—M. BERTANI.

See also absts. **3931** (report, Union of South Africa); **3932** (report, Tanganyika Territory); **3934** (report, F.A.O.); **3936** (report, U.S.A.); **3937** book, annual review of microbiology).

IMMUNITY

GORRILL, R. H. & HOBSON, D. (1952). **The agglutinating property of complement.**—*J. Path. Bact.* **64,** 257-263. [Authors' summary copied *verbatim.*] 3727

Sera from man, rabbit and guinea-pig contain a heat-stable fraction which potentiates agglutination of sensitised red blood corpuscles. This factor behaves qualitatively and quantitatively as does the fourth component of complement. There is evidence that the agglutinating property of the fourth component is opposed by the first component of complement.

GRABAR, M. M. P., BOURDUAS, A. & HOLTZER, A. (1952). Mise en évidence in vitro d'anticorps chez des sujets sensibilisés à l'ovalbumine. **[Demonstration *in vitro* of antibodies in subjects sensitized to albumen.]**—*Acta Allerg.* **5,** 30-36. [In French.] 3728

Experiments show that the sera of human beings allergic to egg white agglutinate the erythrocytes of sheep sensitized by a solution of egg white treated with tannic acid. An estimate of the quantity of antibody in the serum is obtained by altering the dilution of the latter. Two of the sera examined gave positive reactions even in a dilution of 1 : 10,000; in one the precipitate contained 180 μg. N of antibody per ml. A third serum agglutinated the sensitized erythrocytes only at 1 : 100. The method is sensitive and specific and might well be applied to other cases of allergy, using suitably chosen antigens.—CHARLOTTE M. WOOD.

KROÓ, H. (1950). Die Bedeutung von Immunitätsvorgängen für den chemotherapeutischen Hislerfolg. **[The immunization process in relation to chemotherapy.]**—*Schweiz. Z. allg. Path.* **13,** 353-358. [English, French and

Italian summaries. English summary modified.] 3729

Experimental spirochaetosis of fowls can be cured by a single injection of penicillin. Chickens 31 days old were cured without exception, wheras in a large proportion of new-born chicks relapses occurred. The serum of penicillin treated new-born chicks showed no spirochaetocidal properties, whereas the serum of 30-day-old chickens had protective power, even when diluted. With increasing dosage of penicillin better results were obtained in the day-old chicks. Similar experiments were carried out on mice infected with *Trypanosoma brucei;* the adverse effect of splenectomy on the resistance of these animals could only be counterbalanced by increasing the minimal curative dose of neoarsenobenzol fifteenfold.

Brambell, F. W. R., Hemmings, W. A., Henderson, M. & Oakley, C. L. (1952). **Selective and non-selective admission of various antitoxins into foetal rabbits.**—*Proc. R. Soc.* Ser. B. **139**, 567-575. [Authors' summary modified.] 3730

Antitoxins were employed to measure the relative rates of entry of antibodies into the foetal circulation, and into the amniotic fluid, from the uterine lumen in rabbits on the 24th day of gestation. Antitoxic sera prepared in rabbits, cattle and horses against diphtheria toxin, tetanus toxin and *Clostridium welchii* χ-toxin were used, since tests for antitoxins are both sensitive and quantitative. These sera, each immune to one antigen, were mixed and the mixture was injected into the uterine lumen. Analysis of the relative concentrations attained in the foetal sera and amniotic fluids showed that whereas rabbit antitoxins entered the foetal blood at a rate at least fifty times greater than bovine or equine antitoxins, all three antitoxins entered the amniotic fluid at almost identical rates. The concentrations attained in the substance of the membranes traversed provide evidence suggesting the operation of at least two distinct mechanisms. The entry of rabbit antibodies into the foetal circulation may depend on an active process of absorption and secretion by the cells. The entry of both homologous and heterologous antibodies into the amniotic fluid and of heterologous antibodies into the foetal blood, on the other hand, may depend on a process of "seepage" between the cells.

Loiseleur, J. & Sauvage, M. (1951). L'adaptation spécifique des protéides plasmatiques à des éléments minéraux quelconques. **[Specific adaptation of plasma proteins to some mineral elements.]**—*C.R. Acad. Sci., Paris.* **233**, 111-113. 3731

Rabbits were injected daily, for periods ranging from 24 to 75 days, with a solution of either $NiCl_2$ or $CoCl_2$. The concentration of the solution was raised progressively from 0·5% initially to 1·0% finally, and the total volume of the injection was increased from an initial 3 ml. to a final 5 ml. Despite these precautions the treatment provoked systemic disturbance and there was a mortality rate of 26%.

The serum of rabbits so treated developed a specific affinity for the corresponding "antigen", becoming viscous when added to a solution of the chloride that had been employed. The reaction was greater when a γ-globulin preparation was employed. Cross-reactions with the other chloride solution were feeble or negative, and there was no reaction when $NiCl_2$ or $CoCl_2$ was added to the serum or γ-globulin fraction of untreated rabbits.

—Alastair N. Worden.

Thomas, L. & Good. R. A. (1952). **The effect of cortisone on the Shwartzman reaction. The production of lesions resembling the dermal and generalized Shwartzman reactions by a single injection of bacterial toxin in cortisone-treated rabbits.**—*J. exp. Med.* **95**, 409-428. [Abst. from authors' summary.] 3732

In rabbits treated with 25 mg. cortisone for three days, a single intradermal injection of meningococcal or *Serratia marcescens* toxin caused a primary reaction at the site of injection and a secondary generalized reaction in the internal organs which closely resembled the local and general *Shwartzman* reactions. The latter do not occur in the absence of cortisone until a second intravenous injection of the toxin is given. Nitrogen mustard prevented both reactions.—N. Dean.

Aschkenasy, A., Bussard, A., Corvazier, P. & Grabar, P. (1950). Etude sur le rôle de la cortico-surrénale dans la leucopoïèse et dans l'immunité. I. Modifications cytologiques du sang, de la rate et du thymus, après injection d'extrait cortico-surrénal. **[The role of the adrenal cortex in leucopoiesis and immunity. I. Cytological effects of adrenocortical extract on the blood, spleen and thymus gland.]** —*Rev. Hémat.* **5**, 107-129. 3733

Bussard, A., Corvazier, P., Grabar, P. & Aschkenasy, A. (1950). Étude sur le rôle de la cortico-surrénale dans la leucopoïèse et dans l'immunité. II. Modifications des taux de protéides et d'anticorps sériques après injec-

tion d'extrait cortico-surrénal chez le rat. [**The role of the adrenal cortex in leucopoiesis and immunity. II. Effects of adreno-cortical extract on the serum proteins and antibodies in the rat.**]—*Ibid.* 130-147. 3734

I. Groups of adult rats were immunized against the pneumococcus, or *S. enteritidis,* or both *S. enteritidis* and sheep erythrocytes. Haematological and histological examinations were made in the 12-hour period following subcutaneous injection of adrenocortical extract. In the blood there were neutrophilia and lymphopenia. The spleen and thymus diminished in weight. In the thymus, there was destruction and phagocytosis of thymocytes, and in the spleen there was a decrease in small lymphocytes in the follicles and in the larger lymphatic cells of the marginal zone of the follicles. Inside the follicles, there was proliferation of "transitional" cells, which were apparently lymphoblasts.

II. There were no significant variations in the electrophoretic pattern, although in animals with a sufficient original titre there was a definite rise in serum agglutinins, which was contemporaneous with the lymphopenia and the decrease in the cells of the marginal zone and follicles of the spleen.

An attempt was made to resolve the discordant results obtained by workers in this field. —E. Cotchin.

Pickering, G. W. (1952). **Allergy and A.C.T.H.** —*Brit. med. J.* June 7th, 1207-1210. 3735

An hypothesis is presented of the actions of A.C.T.H. and cortisone, which are more consistent and striking in the delayed than in the immediate type of allergic response. —W. R. Bett.

Eisen, H. N., Orris, L. & Belman, S. (1952). **Elicitation of delayed allergic skin reactions with haptens: the dependence of elicitation on hapten combination with protein.**—*J. exp. Med.* **95**, 473-487. 3736

Eight different 2,4-dinitrophenyl compounds were tested for their effect in causing delayed allergic skin responses in g. pigs and human beings, previously sensitized by exposure to 2,4-dinitrofluorobenzene. Four of the compounds were active in this way and four were not. Those which were active were also shown to be capable of covalent combination with protein *in vivo* and *in vitro*. A condition of the ability of a hapten to cause delayed skin reaction may therefore be its ability to combine with skin protein.—R. Marshall.

See also absts. **3590** (agglutinins in vaginal secretions in bovine vibriosis); **3597** (haemagglutination in TB.); **3599** (TB.); **3609-3611** (B.C.G.); **3613** (Johne's disease); **3637-3638** (brucellosis); **3676** (anaplasmosis); **3686** (F. & M. disease); **3689** (sheep-pox vaccine); **3696-3698** (immunological studies of certain tropical viruses); **3710** (swine fever vaccines); **3712** (distemper); **3719, 3721** and **3723** (Newcastle disease); **3735** (A.C.T.H.); **3925** (apparatus for electrophoretic analysis of two sera).

PARASITES IN RELATION TO DISEASE [GENERAL]

Banks, A. W. (1952). **Some animal parasites of the Northern Territory, and some remarks.** —*Aust. vet. J.* **28**, 108-110. 3737

B. listed some 40 species from domestic animals. Infestations of cattle with *Amblyomma triguttatum,* the kangaroo tick, are not uncommon, and may be heavy on calves. Flea infestations of dogs and cats are extremely rare in the Alice Springs area, and introduced dogs carrying heavy infestations are soon free.

Oncicola sp. was found in a dingo (*Canis dingo*).—H. McL. Gordon.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Harbour, H. E., Hughes, A. W. McK., Rewell, R. E. & White, E. G. (1950). **Discussion on the mechanisms of disease production by ectoparasites.**—*Proc. R. Soc. Med.* **43**, 527-534. 3738

Harbour drew attention to the changes which may be produced by the different external parasites themselves, quite apart from the symptoms caused by the pathogens which they may transmit. Keds, lice, mange acari, ticks, warbles and the group of flies causing the various types of myiasis were mentioned and their action briefly described. Tick pyaemia caused by staphylococci entering the wounds made by ticks on young lambs was referred to.

The various ways in which pathogens may be carried by vectors were enumerated. Among those infections East Coast fever and redwater fever were compared with regard to host specificity and persistence of the parasite in the vector. The persistence of the *Babesia* through several generations of ticks was correlated with its high degree of host specificity, while *Theileria parva* requires a reservoir which is believed to exist among wild fauna, since this infection in the tick is transitory.

Population density of the arthropod vector, the duration of the infection in the vector, and the chances of contact with the host were stressed as important factors in disease produc-

tion by ectoparasites. It was also noted that the organs of the vector which became infected would be expected to influence the mode of transmission, *e.g.* salivary gland infection correlated with transmission by blood sucking.

In discussion on the paper Hughes noted differences in the mechanisms of biting of *Cimex lectularius* and *Pediculus humanus*, the habits of defaecation of the ectoparasites being important in the transmission of infection. Rewell stated that infestation with *Ophionyssus serpentium* is often fatal to snakes. Recent American work had shown these parasites to be vectors of the pathogenic organism, *Proteus hydrophilus* which had been previously overlooked.

Sarcoptes scabiei may attack different hosts, but the extent of its burrows and their angle to the skin in each host are different. In addition to man, it also infests the gorilla and the orang-utan but probably not the chimpanzee. White suggested that hypersensitivity rather than immunity was the important factor in the varied susceptibility of human beings to insect bites.—L. P. Joyner.

Blomefield, L. C. (1952). **A comparative study of arsenite of soda, benzene hexachloride, DDT, toxaphene and combinations of these in the control of ticks.**—*J. S. Afr. vet. med. Ass.* **23**, 1-8. **3739**

Effects of the above dips as used by the farmers were assessed by tick counts on sprayed, dipped and control animals. Arsenite of soda (0·16%) and gamma benzene hexachloride suspension (0·02%) were effective against all species except the arsenic resistant *Boophilus decoloratus*.

D.D.T. (wettable powder, 0·2%) controlled this tick, but not *Amblyomma hebraeum*, *Rhipicephalus appendiculatus* or *R. evertsi*. Combinations of B.H.C.-D.D.T. or arsenic-D.D.T. were universally effective. Toxaphene gave excellent control of *A. hebraeum* and good control of *R. appendiculatus* and *R. evertsi*, but poor control of *B. decoloratus*.

—Beryl A. Kay.

Najera, L. & Mayer, H. F. (1951). Valoracion experimental de algunos insecticidas en cuanto a sus acciones sobre el Argas persicus Oken, 1818. **[Action of D.D.T. and benzene hexachloride on *Argas persicus*.]**—*Rev. Med. vet., B. Aires.* **33**, 1-10. [In English.] **3740**

In contact dusting tests on 20 specimens of *A. persicus* benzene hexachloride at concentrations of 10% and 20% was superior to D.D.T. at 50% concentration. In tests in which the ticks were placed in a closed chamber under conditions in which the parasiticides could diffuse freely into the air, the knock-down value of the former was greater than that of the latter, but after a period of exposure to light and air, the latter appeared to be the more effective parasiticide.—K. J. Sinclair.

Whitnall, A. B. M., Thorburn, J. A., McHardy, W. M., Whitehead, G. B. & Meerholz, F. (1952). **A BHC-resistant tick.**—*Bull. ent. Res.* **43**, 51-65. **3741**

The presence is reported, in districts of the Cape Province, South Africa, of a strain of *Boophilus decoloratus*, which is resistant to acaricidal concentrations of benzene hexachloride (B.H.C.). Field and laboratory tests indicated that the resistance had developed to the extent that the normally effective strength of B.H.C., 50 p.p.m. γ-isomer, failed to give control, and concentrations of 1,000 p.p.m. γ-isomer, did not give 100% kill. D.D.T. and toxaphene (chlorinated camphene) gave good control against B.H.C. resistant ticks in the field, but not chlordane. The ticks developed resistance to B.H.C. in the same area as that in which arsenic resistance was first observed, and it was confirmed that resistance to arsenic was still present.—D. W. Jolly.

See also absts. **3663-3664** (*Glossina caliginea*); **3737** (*Amblyomma*); **3931** (report, Union of South Africa); **3936** (report, U.S.A.).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Swanson, L. E. & Hopper, H. H. (1950). **Diagnosis of liver fluke infection in cattle.**—*J. Amer. vet. med. Ass.* **117**, 127-129. **3742**

After being mixed with water the sample is passed through a series of sieves and is allowed to settle, the supernatant fluid being discarded and the sediment centrifuged. Fresh water is added and the sample is again centrifuged, the supernatant fluid again being removed and the sediment stained and examined for ova.

—Jas. G. O'Sullivan.

Moormann, H. (1950). Die Leberegelkrankheit (Fasciolosis) beim Menschen. Eine klinische Betrachtung mit kasuistischem Beitrag (Beobachtung einer Fasciolosis bei einem Kinde).

[**Report of infestation with** *Fasciola hepatica* **in a child.**]—*Med. Klin.* **45**, 4-8. 3743

An account of infestation of a six-year-old girl with *F. hepatica,* the parasites being found in the gall-bladder and bile ducts. There was suppurative cholangitis, together with liver abscesses.—W. R. Bett.

I. Raven, C. P. & van Zeist, W. (1950). **On the influence of distilled water and lithium chloride upon the eggs of** *Limnaea stagnalis* **L. at the 2- cell stage.**—*Proc. K. nederl. Akad, Wet.* **53**, 601-610. [In English.] 3744

II. Blaauw-Jansen, G. (1950). **On the influence of temperature and of lithium chloride on the amoeboid mobility of unsegmented eggs of** *Limnaea stagnalis.*—*Ibid.* 910-912. [In English.] 3745

I. Development of two-celled eggs of *L. stagnalis* is blocked at the third cleavage in distilled water and hypotonic (0·05% and 0·1%) LiCl solutions. In 0·2% LiCl the second cleavage is abnormal and in hypertonic LiCl solutions development stops immediately. The primary action of the lithium ion consists in changing the hydration of the cytoplasm.

II. The number of eggs showing amoeboid movement before the first cleavage depends on temperature. Low temperatures favour such movement. In hypertonic and isotonic solutions of LiCl, strong amoeboid movements were observed. Solutions of less than 0·1% had no influence on the movement. About 1,000 eggs were studied in the experiments.

—Charlotte M. Wood.

Batte, E. G., Swanson, L. E. & Murphy, J. B. (1951). **Control of fresh water snails (intermediate hosts of liver flukes) in Florida.**—*J. Amer. vet. med. Ass.* **118**, 139-141. 3746

Pseudosuccinea columella and *Fossaria cubensis* lived for 16 days in dry sand and for four months in moist sand. Eradication by drainage was difficult; the authors recommended the use of copper sulphate for the destruction of the snails.—Jas. G. O'Sullivan.

Hoffman, D. O. & Zakhary, R. (1951). **The effect of temperature on the molluscacidal activity of copper sulfate.**—*Science.* **114**, 521-523. 3747

The response of *Biomphalaria boissyi,* intermediate host of *Schistosoma mansoni* harboured in irrigation canals in Egypt, was observed at five temperatures, between 14° and 26°C., using copper sulphate ($CuSO_4.5H_2O$) at 0·05–100 p.p.m. In a parallel series in the absence of copper sulphate there was no mortality at 26°C., but 100% at 38°C. The scatter diagram prepared showed that LD_{50} decreased sharply with temperature rise, the estimated values being 14°C., 13 p.p.m.; 17°, 4·8 p.p.m.; 20°, 1·4 p.p.m.; 23°, 0·58 p.p.m.; 26°, 0·25 p.p.m.

An inverse relationship between LD_{50} for *B. boissyi* and oxygen consumption in *Australorbis glabratus* was discussed as confirmatory evidence.—K. J. Sinclair.

Fain, A. & Lagrange, E. (1952). Un foyer de bilharziose bovine à *Schistosoma bovis* dans l'Ituri. [*Schistosoma bovis* **in cattle in the Belgian Congo.**]—*Ann. Soc. belge Méd. trop.* **32**, 49-51. 3748

Most of the adult flukes were found in the mesenteric veins and there was difficulty in demonstrating ova in the faeces. *S. mansoni* occurs in the region but not *S. haematobium.*

—Jas. G. O'Sullivan.

Wery, J. E. (1950). La schistosomiase bovine au Ruanda-Urundi. [**Bovine schistosomiasis in Ruanda-Urundi, Belgian Congo.**]—*Ann. Soc. Belge méd. trop.* **30**, 1613-1614. 3749

The last portion of the urine obtained by catheterization was found to have a higher content of ova of the parasites than the rest; centrifugation probably destroys the eggs. W. considered that all cases of bovine chronic haematuria in this territory are probably due to schistosomiasis.—Jas. G. O'Sullivan.

Dutt, S. C. & Srivastava, H. D. (1952). **On the morphology and life history of a new mammalian blood-fluke** — *Ornithobilharzia dattai* **N. sp. (Preliminary report.)**—*Parasitology.* **42**, 144-149. 3750

The parasite was obtained from artificially infected buffalo-calves and g. pigs and from naturally infected buffaloes. The snail host is *Lymnaea luteola.* The morphology of the adults, eggs and cercariae was described.

—Jas. G. O'Sullivan.

Deschiens, R. & Poirier, M. (1949). Anatomie pathologique de l'intoxication experimentale subaiguë et chronique par les substances toxiques vermineuses. [**Pathological anatomy of experimental subacute and chronic poisoning with toxic substances of parasites.**]—*Bull. Soc. Path. exot.* **42**, 70-76. 3751

The authors recorded the controlled experimental intoxication of g. pigs with extracts of *Ascaris equorum, Taenia saginata* and with hydatid fluid. They stated that the g. pig and young cat are more sensitive to the action of these toxins than is the rat.

A constant type of lesion involving the respiratory tract, liver, kidneys and blood developed in the g. pigs. The extract of *A. equorum* and the hydatid fluid were more toxic than extract of *T. saginata*. The lesions resembled those following administration of histamine.—K. B. SINCLAIR.

MINNING, W. & DING, P. C. (1951). Hetrazan-Wirkung bei Mäusetrichinose. [**Effect of hetrazan on mice infected with** *Trichinella*.] —*Z. Tropenmed. u. Parasit.* **3**, 103-108. [Abst. from English summary.] 3752

The effect of hetrazan was studied in mice which were infected with 100 *Trichinella* larvae each. Groups 1 and 2 were given 300 mg. per kg. and 600 mg. per kg. respectively three times daily for five days; both groups were started on drug treatment 24 hours after infection and killed 24 hours after the last dose. They had fewer intestinal *Trichinella* than control mice. In group 3, with treatment beginning six days after infection, this reduction was less evident. Autopsies of group 4, treated as group 1 but killed 36 days after infection, did not allow definite conclusions as to the effect of hetrazan on the young worms and those in muscle.

WETZEL, R. (1949). Das Vorkommen von *Trichostrongylus axei* in deutschen Pferden. [*Trichostrongylus axei* **in German horses.**]—*Dtsch. tierärztl. Wschr.* **56**, 321-323. 3753

T. axei has been recorded from the horse in several countries, but had not hitherto been reported in this host in Germany. As the eggs of this worm are very similar to those of the horse strongyles, diagnosis was based on larval culture. Of 83 horses so examined seven were infested and four further cases were detected within two years.—M. L. CLARKE.

I. MICHEL, J. F. (1952). **Self-cure in infections of** *Trichostrongylus retortaeformis* **and its causation.** [Correspondence.]—*Nature, Lond.* **169**, 881. 3754

II. MICHEL, J. F. (1952). **Inhibition of development of** *Trichostrongylus retortaeformis*. [Correspondence.]—*Ibid.* 933-934. 3755

I. Self-cure in rabbits carrying *T. retortaeformis* may occur when a massive dose of infective larvae is superimposed on an existing infection. When the dose of larvae is small, the effect is only additive.

II. The administration of a massive dose of *T. retortaeformis* larvae to a rabbit already infested with this nematode, causes the development of the larvae to be arrested. They can remain dormant, after entering the intestinal mucosa, for up to 98 days, but during this period they may resume their normal development if the resistance of the host declines.

—D. W. JOLLY.

RIEK, R. F. (1951). **The use of phenothiazine against the nematode parasites of cattle with particular reference to the hookworm,** *Bunostomum phlebotomum* **(Railliet, 1900) Railliet, 1902.**—*Aust. vet. J.* **27**, 197-202. 3756

Phenothiazine was administered to calves 5–14 months old under field conditions, anthelmintic efficiency being determined by worm egg counts and faecal cultures carried out for three weeks before and four weeks after treatment. The drug was administered by mouth as a drench, by rumen injection through the flank, and in a few cases by abomasal injection through the abdominal wall. Doses of 0·1 g. per lb. body weight were effective only against *Haemonchus contortus* and *Oesophagostomum* (*Bosicola*) *radiatum*. Doses of 0·2 g. per lb. body weight were more effective against these species and also removed *Trichostrongylus* spp. but were not effective against *B. phlebotomum*, *Cooperia* spp. and *Ostertagia* spp. An increase to 0·3 g. per lb. did not increase efficiency but was followed by ill effects (photosensitization).

—H. McL. GORDON.

WETZEL, R. (1950). Zur Magenwurmkrankheit der Rinder. [**Stomach worms in cattle.**] —*Tierärztl. Umsch.* **5**, 235-241. 3757

In 64 cattle on 14 farms there was a mixed infestation with *Haemonchus contortus*, *Ostertagia ostertagi* and *Cooperia oncophora*. *Trichostrongylus axei* and *Nematodirus filicollis* occurred in a few animals. *Ostertagia* and *Cooperia* predominated on 11 farms: on the other three farms *Haemonchus* predominated.

The pastures were mainly heavily infested in the early spring. Larvae that survived the winter did not play an important role. Phenothiazine was 97–100% effective against *Haemonchus*, 78–93% effective against *Ostertagia* and 48–63% against *Cooperia*.—M. L. CLARKE.

THOONEN, J. & VERCRUYSSE, R. (1951). De rode maagworm, Hyostrongylus rubidus (Hassal en Stiles 1892) Hall 1921 bij het varken. [*H. rubidus*, **a stomach worm in pigs.**]—*Vlaam. Diergeneesk. Tijdschr.* **20**, 139-144. [English, French and German summaries. Abst. from English summary.] 3758

The authors reported a fatal case—stated to be the first recorded in Belgium—of *H. rubidus* infestation in a sow. There was chronic interstitial gastritis, together with atrophy of the

glandular epithelium. They gave an account of the biology of the parasite and discussed pathogenesis and treatment. They considered that treatment for a few days with a mild purgative on the basis of magnesium sulphate and sodium bicarbonate to remove the abundant mucus from the stomach would be advisable before giving the anthelmintic.—JAS. G. O'SULLIVAN.

SOLIMAN, K. N. (1952). **Observations on the survival on pasture of preparasitic stages of *Dictyocaulus viviparus* in Southern England. II.**—*Brit. vet. J.* **108**, 204-213. [Abst. from author's summary. For part I. see *V.B.* **22**, 3449.] **3759**

Infective material containing the first-stage larvae of both *Dictyocaulus filaria* and *D. viviparus* in (a) faeces and (b) tap water were exposed out of doors on miniature plots with six different types of herbage, during the latter part of the summer season of 1951. The plots were examined at weekly intervals.

With the first-stage larvae, the proportion recovered fell below 1% after a fortnight. With the third-stage larvae, the proportion recovered fell below this level after three weeks. Using third- or infective-stage larvae, no *D. filaria* were recovered after 35 days' exposure and no *D. viviparus* after 28 days.

Owing to possible loss of material inevitably associated with the technique employed, the recovery figures recorded can only be regarded as a minimum estimation of the survival rate of the larvae of these two species under the conditions of the exposure.

SOLIMAN, K. N. (1951). **Observations on the orientation of certain lungworms in the respiratory tracts and on their feeding habits.** —*Brit. vet. J.* **107**, 274-278. **3760**

Dictyocaulus viviparus, D. filaria and *Metastrongylus apri* lie with their heads towards the bronchioles and away from the trachea. The gut contents of the worms were similar to the contents of the inflammatory exudate of the host, this indicating that the parasites do not suck blood but that they subsist on bronchial exudate.—JAS. G. O'SULLIVAN.

BENDIXEN, H. C., ROTH, H. & THORDAL-CHRISTENSEN, A. (1950). Natriumfluorid som middel mod spolorm hos svin. **[Sodium fluoride as an ascaricide in pigs.]**—*Nord. Vet.-Med.* **2**, 385-404. [In Danish. English and German summaries.] **3761**

The authors gave an account of the treatment of 53 pigs, 47 of which had *Ascaris* infestation. They used a preparation containing 92% pure NaF which was fed mixed with the dry (crushed grain) ration. Using the dosage scheme described by TURK & HALE [*V.B.* **19**, 1883] the drug was found to be 96·2% effective. The majority of the worms were passed on the third day after treatment, but some as late as the 7th day. For group treatment the authors recommended that the mixture be fed dry; otherwise it was fed mixed with water.

—F.E.W.

TODD, A. C. & HOLLINGSWORTH, K. P. (1952). **Host sex as a factor in development of *Ascaridia galli*.**—*Exp. Parasit.* **1**, 303-304. [Authors' summary modified.] **3762**

In a series of experiments involving 1745 immature chicks given known numbers of infective eggs of *A. galli*, more worms were found to develop in male chicks than in female chicks. Statistically significant differences in worm numbers did not occur, however, until the birds in these experiments were 5–9 weeks of age.

BUSHNELL, L. D. & ERWIN, L. E. (1949). **The antitryptic action of *Ascaridia galli*.**—*Poult. Sci.* **28**, 8-9. **3763**

Saline extracts of washed *Ascaridia galli* had anti-tryptic activity. All extracts had similar titres irrespective of the age of the worms.—P. H. HERBERT.

MASSEY, V. & ROGERS, W. P. (1951). **Conditions affecting the action of fluoroacetate on the metabolism of nematode parasites and vertebrate animals.** — *Aust. J. Sci. Res.* Series B. **4**, 561-574. **3764**

Fluoroacetate inhibited by 35–50% the respiration of mince made from *Ascaridia galli* or *Nematodirus* spp. embodying 0·0003 M methylene blue. Inhibition was lessened by adding intermediates of the tricarboxylic acid cycle, of which succinate was most effective and oxaloacetate least so.—H. McL. GORDON.

BURCH, G. R. & BLAIR, H. E. (1951). **A rapid test for the diagnosis of *Dirofilaria immitis*.**—*Vet. Med.* **46**, 128-130. [Authors' summary slightly modified.] **3765**

The authors gave elaborate details of rapid tests for diagnosis of *D. immitis* infestation of dogs, using a proprietary suspending liquid.

DRUDGE, J. H. (1952). **Arsenamide in the treatment of canine filariasis.**—*Amer. J. vet. Res.* **13**, 220-235. **3766**

D. tested the comparative therapeutic efficiency of the oral and intravenous routes for the administration of arsenamide in the treatment of heartworm, *Dirofilaria immitis* infestation in dogs, basing the results on worm counts. He studied the distribution of arsenic

in the body in relation to these two methods of administration.

Oral administration was ineffective, probably owing to the inactivation of the arsenamide in the alimentary tract. Fifteen daily intravenous doses of 0·45 mg. per kg. were required for maximum efficiency.—D. W. JOLLY.

CHABAUD, A.-G., CAMPANA, Y. & TRUONG-TAN-NGOC. (1950). Note sur les dracunculides d'oiseaux. **[Dracunculus in ducks.]**—*Ann. Parasit. hum. comp.* **25**, 335-339. 3767

A description based on female specimens of *Avioserpens* isolated from tumours in the submandibular region of domestic ducks in southern Viet-Nam (Indo-China). Reasons were given why the Japanese genus *Oshimaia* should be regarded as a synonym.

—JAS. G. O'SULLIVAN.

See also absts. **3737** (*Oncicola*); **3877** (helminth infestation and the use of sewage as fertilizer); **3931** (report, Union of South Africa); **3934** (report, F.A.O.).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

DAVIS, C. L. & SHORTEN, H. L. (1952). **Carcinoma of the eye of sheep.**—*J. Amer. vet. med. Ass.* **121**, 20-24. [Abst. from authors' summary.] 3768

A report of six cases of epidermoid carcinoma of the eye or its appendages in sheep with a description of the gross and microscopic pathological findings of two cases. As in cattle, such lesions may involve the conjunctiva alone or may arise primarily from the epithelial covering of the eyeball. The condition is relatively rare in sheep.

MOMBERG-JØRGENSEN, H. C. (1951). **Enzootic malignant granulomatosis in ferrets.**—*Acta path. microbiol. scand.* **29**, 297-306. [In English. Abst. from author's summary.] 3769

Over a period of three years 11% of a large stock of ferrets developed a multiple granulomatous condition affecting visceral organs. Details were given of the general nature of the lesions and of their histology. The cause of the condition was not found.

VENDRAMINI, R., BRUNI, A. & MAJORI, L. (1952). Sulla presenza di un virus nella leucosi del cane analogo a quello delle leucemie umane. **[On the presence of a virus in leucosis in dogs analogous to that in human leucaemia.]**—*Arch. Vet. Ital.* **3**, 53-62. [English, French, German and Spanish summaries. Abst. from English summary.] 3770

Blood samples from leucaemic dogs, injected into healthy g. pigs, dogs and rabbits, almost invariably produced a fatal syndrome accompanied by such symptoms as vaginitis or meningoencephalitis, dependent upon the site of injection, intraperitoneal and intracranial respectively. Only a slight response was produced in pigeons and none in white rats and mice. Numerous observations suggest that a virus is the causal agent. The authors presented an analogy between these findings and similar observations recorded in the literature on work with material from leucaemic human beings.—A. H. LINTON.

EMERSON, G. A. (1951). **The effect of adrenal cortical steroids and diet on tumor growth.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13**, 92-94. 3771

Cortisone caused almost complete regression of lymphosarcoma in male mice deprived of riboflavin, but less regression in normally fed mice.—N. DEAN.

BRYAN, W. R., MAVER, M. E., MOLONEY, J. B., CALNAN, D., WHITE, C. L. & WOOD, M. T. (1951). **Biological activity of the agent of chicken tumour I (Rous) in citrate buffers of various molar concentrations.**—*J. nat. Cancer Inst.* **11**, 929-937. [Author's summary slightly modified.] 3772

Quantitative determinations were made of the biological activity of suspensions of the agent of chicken tumour I (Rous) in pH 6·7 citrate buffers of various molar concentrations. Observations were carried out both at 37°C. and at 6°–8°C. At 37°C. there was some loss in potency during a period of three hours at all concentrations of citrate tested but, within the concentration range 0·0078 to 0·5 M, the loss averaged only about 30%, and was therefore not sufficient to preclude the use of citrate buffers for investigations on the agent at this temperature.

The agent remained fully active at 6°–8°C. in all concentrations of citrate from 0·0039 to 0·1 M. Higher concentrations, up to practically complete (97%) saturation, were tolerated at this temperature without excessive loss (*i.e.*, only about 35%, on an average) in tumour-producing activity.

GREENWOOD, A. W. & CARR, J. G. (1951). **A possible connexion between the Rous I sarcoma virus and fowl paralysis.**—*Off. Rep. 9th World's Poult. Congr., Paris.* 3, 9-11. 3773

Possible transformation of tumour virus to the type causing fowl paralysis is noted from experiments with poultry resistant to Rous sarcoma virus which developed a high incidence of fowl paralysis.—K. G. TOWERS.

NUTRITIONAL AND METABOLIC DISORDERS

POUNDEN, W. D. (1952). **Prophylaxis, diagnosis and therapy of rumen dysfunction.**—*Calif. Vet.* 5, No. 5. pp. 14-17. 3774

The clinical aspects of the ruminal flora were considered with especial reference to its re-establishment in cases of dysfunction, and to the use of ruminal lavage.—JOHN SEAMER.

BAUER, H. R. & ENGLERT, H. K. (1952). Darmflora beim Ferkeldurchfall und Fütterungstherapie. **[Intestinal flora in diarrhoea of piglets and nutritional therapy.]**—*Mh. prakt. Tierheilk.* 4, 66-83. 3775

The authors discussed at length the possible significance of variations from normal of the intestinal flora in relation to diarrhoea and unthriftiness in piglets. They indicate measures directed towards maintaining or restoring a normal flora that could be employed in controlling these conditions, including attention to rearing methods, the correct use of purgatives and other drugs, dietetic measures if carbohydrate or protein digestion is upset, the provision of access to soil, and the administration by feeding of cultures of "normal" coliform bacteria (Mutaflor).—E. COTCHIN.

SHANKS, P. L. (1952). **The use of an aureomycin fermentation product ("Aurofac") in the treatment of unthrifty pigs.**—*Vet. Rec.* 64, 365-366. [Abst. from author's summary.] 3776

A report on tests of a proprietary fermentation product of aureomycin, containing vitamin B_{12}, for the treatment of unthrifty young pigs. Good results were reported.

ANGELO, M. (1951). Anemia emolitica emoglobinurica da cavoli fioriti in bovine lattifere. **[Seeded wild cabbage (*Brassica oleracea*) causing anaemia and haemoglobinuria in dairy cattle.]**—*Zooprofilassi.* 6, 361-363. 3777

A condition of dairy cattle characterized mainly by anaemia and haemoglobinuria was recognized as caused by feeding with seeded wild cabbage. Wild cabbage fed before it had seeded did not cause any symptoms. Elimination of seeded wild cabbage from the diet associated with an antiallergic treatment, resulted in the recovery of the animals. This circumstance, and the fact that no toxic substances were found in the cabbage, support the conclusion that the condition observed is of allergic nature, and is due to an unknown substance contained in the seeds of the cabbage.
—M. BERTANI.

YONEMURA, T. & SHIGA, K. (1949). **[Studies on multiple myo-degeneration of sheep in Hokkaido. II. Feeding tests with the milk of the dam.]**—*21st Rep. Govt. exp. Sta. Anim. Hyg., Tokyo.* 1949. pp. 1-10. [Abst. from English summary.] 3778

From feeding tests on mice, it would appear that the factor responsible for the disease is transmitted in the fat—separated by centrifuging—of the milk of affected ewes and is heat stable.—CHARLOTTE M. WOOD.

ANDERSON, G. W., CUNNINGHAM, J. D. & SLINGER, S. J. (1952). **Effect of protein level and penicillin on growth and intestinal flora of chickens.** — *J. Nutr.* 47, 175 - 189. [Authors' summary copied *verbatim.*] 3779

Penicillin caused an increase in weight and improvement in feed efficiency of chickens fed diets containing 17, 20, 23 and 26% protein. While penicillin did not appear to change the protein requirement, the evidence suggests that the antibiotic enhanced protein utilization.

A considerable reduction in the pH of the cecal contents of chickens resulted from the addition of penicillin to diets containing 17, 20, 23 and 26% protein. The extent of the reduction increased with increasing protein up to the 23% level. The alterations in pH appeared to be associated with the increase in numbers of lactobacillus, aciduric, anaerobic and microaerphilic, aerobic and coliform types of organisms.

The increase in coliforms was due to the presence of an atypical strain of *E. coli.* Enterococci counts were reduced by the addition of penicillin, the reduction being similar at all levels of protein. Penicillin effected a marked increase in the size of the ceca with all levels of protein.

In *in vitro* respiration studies using the various diets as substrate and the specific organisms as inoculant, penicillin enhanced the O_2

uptake of lactobacillus and the aciduric type of organisms.

With diets containing levels of protein up to 23% a relatively close correlation was noted between increased growth of the birds and elevation in the numbers of certain microorganisms. It is suggested that the increase in numbers of these microorganisms or the resultant increase in the size of the ceca may be factors in explaining the mechanism of growth response to the antibiotic. On the other hand, the decrease in pH may cause increased activity of the intestinal villi or more complete digestion, and thus play a role in the growth response mechanism.

PHILLIPSON, A. T. & MITCHELL, R. L. (1950). **Experimental cobalt deficiency in the sheep.** —*Brit. J. Nutrit.* **4,** Nos. 2 & 3. pp. iii-iv of absts. 3780

Administration of cobalt *per os* and by cannula to the abomasum and duodenum respectively to three groups of lambs 8–12 months old and deficient in cobalt, led to significant weight increases in the first and second groups and a variable response in the third. The cobalt content of the rumen liquor however increased in all the animals.

With lambs five months old intravenous and duodenal dosing was ineffective although all liver cobalt levels increased; the authors therefore do not regard liver cobalt levels *per se* as indicative of cobalt requirement.

They consider, however, that the presence of cobalt may be necessary in the rumen.

—K. MACFARLANE.

JAFFÉ, W. G. (1952). **Influence of cobalt on reproduction of mice and rats.**—*Science.* **115,** 265-267. 3781

Mice and rats on a diet of wholly plant origin had increased ability to rear young when fed additional cobalt or vitamin B_{12}.

—P. H. HERBERT.

O'MOORE, L. B. (1952). **Some effects of mineral imbalance in herbage on the health of grazing stock [including selenium poisoning.]**—*Irish vet. J.* **6,** 392-404. Discussion pp. 442-453. 3782

The conditions mainly dealt with were: aphosphorosis, both overt ("bog lame") and latent, including cases of anoestrus; copper deficiency, of which a conditioned form occurs in several Irish counties; cobalt deficiency, occurring particularly on granitic soils of the western and south-western counties, the old red sandstone formations of Kerry, and soils impregnated with calcareous sea-sand; and selenium poisoning, occurring as a chronic disease of horses and cattle in a localized area of Co. Limerick. In the latter condition, horses may shed one or more hooves, or there may be laminitis, and loss of hair from the mane and tail; in cattle, there is unthriftiness, poor coat, a deformity or ringed appearance of the hooves, loss of hair, pain in the feet, and occasionally sloughing of part or all of the tail. It is mentioned that a dietary deficiency of calcium is unknown in grazing stock in Ireland, and that no case of "swayback" has yet been confirmed in that country. There was extensive discussion on the paper.—E. COTCHIN.

RODAHL, K. (1952). **Hypervitaminosis A in the dog.**—*Fed. Proc.* **11,** 130. [Only abst. given. Abst. from abst.] 3783

An average of 387 I.U. vitamin A per g. body weight was given daily to a dog for 57 days. Following the first single dose weakness, drowsiness and sickness were oberved. Continued doses caused anorexia, emaciation, weakness, alopecia, diarrhoea, vomiting, bleeding and swelling of the gingiva, nose bleeding and general muscular atrophy. The X-ray examinations, P.M. and histological findings were identical with those observed in rats, mice, g. pigs and rabbits with hypervitaminosis. R. discussed the similarity between hypervitaminosis A and scurvy.—CHARLOTTE M. WOOD.

LANGER, H. (1951). Dermatitis seborrhoides des Saugkalbes als Mangelkrankheit. **[Dermatitis in the calf—a deficiency disease.]**—*Mh. Vet.-med.* **6,** 369-376. 3784

Investigations show that dermatitis in the calf is caused by the lack of protective food in the diet of the dam. Cure has been effected by administration of vitamins A and D, riboflavin, pyridoxine and biotin.—CHARLOTTE M. WOOD.

LEHRER, W. P., JR., WIESE, A. C. & MOORE, P. R. (1952). **Biotin deficiency in suckling pigs.**—*J. Nutr.* **47,** 203-212. [Authors' summary modified.] 3785

In unweaned pigs started on experiment when 48 hours old, biotin deficiency was apparently associated with ulceration of the skin, transverse cracking of the soles and top of the hoof, inflammation of the mucous membranes of the mouth, dermatitis, and alopecia. The urinary excretion of biotin failed to decrease, and was not materially affected by the feeding of sulphathalidine. This may indicate that sulfathalidine does not inhibit the organisms responsible for intestinal synthesis of biotin in the unweaned pig, or perhaps that some synthesis of biotin occurs in the tissues.

LE GALLIC, P. (1952). Nouvelles recherches sur l'équilibre alimentaire et sur les besoins du pigeon en vitamin B_1. **[The thiamine requirement of the pigeon.]**—*C.R. Soc. Biol., Paris.* **146**, 8-10. **3786**

Pigeons on vitamin free but carbohydrate rich or poor diets vary in their liability to polyneuritis. Alimentary equilibrium plays a fundamental role and any reaction on the intestinal flora, for example, caused by bacteriostatic agents is secondary. Pigeons on diets low in carbohydrate have a reduced biochemical requirement for thiamine.

—MALCOLM WOODBINE.

ANON. (1952). **White muscle disease.**—*Jen-Sal J.* March. pp. 5-7. **3787**

The author described the symptoms and macroscopic lesions in lambs and calves. In calves there is often a respiratory distress which may be confused with other respiratory conditions. Sudden deaths may occur in both species.

Pure vitamin E given parenterally is said to be preventive and curative. Wheat germ oil is, however, unsatisfactory for curative treatment.—E. A. GIBSON.

SMITH, M. J. H. (1952). **Monohydroxybenzoic acids and ascorbic acid depletion of the adrenal glands in the intact rat.**—*Lancet.* **262**, 991-993. [Author's summary slightly modified.] **3788**

The effect of sodium *m*-hydroxybenzoate and of sodium *p*-hydroxybenzoate on the amount of ascorbic acid in the adrenal glands of the intact rat was investigated. Neither of these substances has any therapeutic activity in rheumatic fever, but they both deplete the adrenal ascorbic acid. The significance of this finding was discussed with reference to the theory that the therapeutic action of salicylates is mediated by the pituitary and adrenal glands.

BRÜCKNER, H. (1952). Über die hormonelle Behandlung der Azetonämie des Rindes. **[Hormonal treatment of ketosis in cattle.]**—*Tierärztl. Umsch.* **7**, 221-223. **3789**

A daily dose of 20 mg. of A.C.T.H. ('cortrophine') given subcutaneously is suggested for the treatment of ketosis in cattle.

—CHARLOTTE M. WOOD.

See also absts. **3811** (vitamin B_{12} content of the liver in animals poisoned with carbon tetrachloride); **3878** (nutrition and sexual development in Holstein bulls); **3913-3914** (effect of antibiotics); **3915** (thiouracil supplements)

DISEASES, GENERAL

OPPERMANN, T. (1950). Lehrbuch der Krankheiten des Schafes. **[Textbook of diseases of the sheep.]** pp. 328. Hanover: M. & H. Schaper. 5th Edit. DM. 23.--. **3790**

In preparing this edition the author has had the assistance of Professor Hieronymi for the chapters on infectious diseases. The main sections of the book are: infectious diseases, parasitic diseases, various exotic diseases, diseases of organs and tissues, vitamin deficiencies, poisoning, and inherited defects and diseases. This last section is written by Dr. Sonnenbrodt, formerly of the Department for Research on Inherited Diseases at the Veterinary College in Hanover. There are also short sections on disinfection, docking and castration, diet and aging.

There are 133 illustrations, mainly photographs, most of which are of good quality. They are well dispersed throughout the various sections of the text. At the ends of the sections or sub-sections there are lists of references which extend up to about the year 1944.

Bacterial diseases, especially those caused by clostridia are dealt with in a way which makes it difficult to understand their aetiology and control and in some cases leaves the reader in doubt as to whether clostridia are the causal agents or not. This is mainly due to the practice of referring to organisms by a whole variety of names which fail to suggest any connexion between bacteria of the same group, *e.g.* "gas oedema bacilli", "*B. novi*", "braxy bacilli", "a variant of the braxy bacillus", "*B. gigas*", "*Bact. paludis*", "*Bac. ovitoxicus*", etc. It would be better to drop these names or merely add them in parenthesis and indicate the accepted names of the organisms concerned and the toxins which some of them produce. Some attempt is made to do this under the heading "Gas oedema" but the description of each disease gives merely a confusing variety of names to the causal organisms concerned and does not give any explanation for the use of sera or vaccines.

The N.V.M.A. handbook on Sheep Diseases lists ten diseases as responsible for an annual estimated loss of about £1,000,000 per annum in Great Britain. Of over 300 pages in Oppermann's book only about 30 are devoted to these ten diseases and one wonders just what are the really serious sheep diseases in Germany. So far as British workers are concerned this book will be of value mainly for those sections

which deal with the less common diseases, many of which are dealt with in some detail.

—E. G. WHITE.

ANTHONY, D. J. (1950). **Some aspects of pig production and disease.**—*Vet. Rec.* **62,** 39-41. Discussion: pp. 41-43. 3791

Compared with pre-war days there has been a remarkable drop in the incidence of such diseases as necrotic enteritis, anaemias and accompanying scour, because the lessening of the pig population has reduced the overstocking which was responsible for pig-sick land, and the shortage of imported pig-foods has ensured that pigs have been reared in a more natural fashion. Chemotherapy has also improved.

There are pneumonias which do not respond to treatment with any of the sulphonamides, and there is also some variation in the influenzas.

The cheaper brands of cod-liver oil contain impurities which cause a brownish discoloration in the fat of pigs, and give an unpleasant taste to the bacon.—J. O. L. KING.

KLARENBEEK, A. (1950). De ziekten van de hond. **[Diseases of dogs.]** pp. xviii + 330. Leiden: H. E. Stenfert Kroese's Uitgevers-Maatschappij N.V. Fl. 20.-. 3792

After a preliminary chapter on clinical examination diseases are dealt with under the headings of various body systems as follows: hair and skin; mucous membranes; ears; eyes; lymphatic system; circulatory system, followed by an appendix on diseases of the pericardium; respiratory organs and pleura; the abdomen and peritoneum, with an appendix on hernia; the digestive system, with appendixes on the salivary glands, oesophagus, stomach and intestines, and on the liver and pancreas; the urinary tract; the genital organs, with an appendix on parturition and on the male genital organs; the nervous system; the locomotory system; the endocrine glands and hormone therapy; vitamins and vitamin deficiency; blood; spleen; infectious diseases; poisoning; X-ray examination and therapy; and a chapter on the various methods of destruction of dogs. Special attention is given to endogenous dermatoses, fright disease, osteodystrophia fibrosa juvenilis and other skeletal diseases, endocrine disturbances, vitamin deficiencies and to distemper, hard pad disease, leptospirosis, Aujeszky's disease, toxoplasmosis and streptococcal infections. A list of frequently used prescriptions dosed for a body weight of 10 kg. is given in the terminology of the Dutch Pharmacopoeia. There are 35 photographs.

—C. A. VAN DORSSEN.

PARISH, H. J. (1950). **Notes on communicable diseases of laboratory animals.** pp. vii + 69. Edinburgh: E. & S. Livingstone Ltd. 3s. 3793

The publication of Dr. Parish's monograph is welcome indeed. It gives in concise form the salient features of the communicable diseases of g. pigs, rabbits, mice, rats, hamsters, ferrets, monkeys, cats, dogs, pigeons and canaries. For quick reference it has no equal, provided it is remembered that it treats only of communicable diseases and that certain conditions that occur in laboratory animals tend to simulate such diseases, for example, certain conditions in g. pigs and rabbits particularly, that are caused by bad hygienic conditions or feeding. This is not a criticism of the book, the title of which indicates the contents, but a warning that it should not be relied upon entirely as an aid to diagnosis. On the infectious diseases it is, however, a first-class, comprehensive work presented in a synoptic style which is surprisingly easy to read and understand quickly. For laboratory workers it can be used as a guide to the U.F.A.W. Handbook. It might also be recommended to practising veterinary surgeons who are called increasingly to deal with disease in small animals, now that small-animal breeding is a profitable pastime.—R. M. LOOSMORE.

ANON. (1951). **The stock inspector. Institute of inspectors of stock of New South Wales, Year Book, 1951.** pp. 119. Sydney: The Institute. 2s. 6d. 3794

This publication recorded the proceedings of the annual conference of the Institute of Inspectors of Stock of New South Wales. Comments on myxomatosis in the control of rabbits were given by Edgar (historical notes and recent extensions in Australia) and Beardwood (application). Hindmarsh outlined investigations by Australian workers on diseases of sheep, including black disease, enterotoxaemia, foot rot, trace element deficiency, toxaemic jaundice and blowfly strike. Shanahan gave a detailed discussion on prevention and control of body strike of sheep, with particular emphasis on the use of the newer insecticides, D.D.T. and benzene hexachloride, including the technique of application by dipping, spraying, shower dipping, jetting and "fogging". In a second contribution on sheep lice and ked control by "fogging" he concluded that the method was promising but further investigations were required.

Poisoning of animals was discussed by Charles ("blue couch" poisoning in sheep, and arsenical poisoning in sheep), Byrne (rock fern poisoning in sheep), and Jones (wheat poisoning in sheep).

Lowe described an outbreak of enzootic ataxia of lambs associated with deficiency of copper. Beardwood and Helwig described an outbreak of hypocalcaemia in wethers starved for several days. Harding recorded an outbreak of chorea in young pigs. Moniliasis or thrush in poultry, including treatment with boric acid or copper sulphate was discussed by Pearson. Other diseases of poultry noted were nutritional encephalomalacia in chickens by Byrne and aspergillosis in turkeys by Charles. The difficulties associated with fixation of time of death were discussed by McBarron, who pointed out that the temperature of the carcass is of little value. McClymont reviewed recent advances in nutrition, with brief comments on a variety of topics including vitamin B_{12}, growth stimulation by antibiotics, vitamin E and nutritional encephalomalacia of chickens, injurious effect of sorghum in chicken diets and trace element deficiencies.

Dehorning of dairy cattle was discussed by Farleigh, who provided records of milk production which were at normal levels 24 hours after the operation. Blood described the New York State (U.S.A.) Mastitis Control Programme.

—H. McL. Gordon.

Wirth, D. & Kuscher, A. (1950). Streifenartige urtikarielle Hauterkrankung (Streifenurtikaria bei Pferden. [**A striated form of urticarial skin condition in horses.**]—*Wien. tierärztl. Mschr.* **37**, 449-456. 3795

The skin condition described was observed in 1940-42 mainly in army horses. It occurred in an acute and in a chronic form. In the former there was bilateral, spontaneous, linear thickening of the skin, the thickness of the stripes or weals varying from that of a straw to that of a lead pencil, mainly on the rump. In some cases the condition appeared to have been provoked by changes in environmental temperature. In the chronic form there were more consistent and permanent strands of thickened skin, with depigmentation, oedema and changes in the cutaneous connective tissue.

The aetiology was discussed. The authors considered the condition to be provoked by abnormal breakdown products of metabolic or bacterial origin resulting from sudden changes in feeding, management, surroundings and type of exercise, such as might occur when army horses are mobilized. Four photographs are given.—E. Vazquez Lopez.

Arango, J. E. (1949). Alrededor de la llamada enfermedad de las alturas. [**The condition referred to as altitude disease.**]—*Rev. Fac. Med. vet., Bogotá.* **18**, 141-144. 3796

"Altitude disease" occurs sporadically in cattle in the Andes at altitudes of 2,600 to 4,000 m. Runnells [(1946) *Animal Pathology*—Ames, Iowa Collegiate Press Inc.] called it brisket disease; it is locally known as 'papera'. Affected animals recover when moved to lower altitudes, unless the disease is in an advanced state. The author has given digitalis preparations parenterally with good results, transfer to lower altitudes then being unnecessary. There is no real evidence that the disease occurs in horses.—E. Pantelouris.

McIntosh, B. M. (1950). **Oedema of the bowel in pigs.** [Correspondence.]—*Vet. Rec.* **62**, 177-178. 3797

A brief report of an outbreak of oedema disease on a small holding in Natal, involving five of seven weaner pigs, two of which recovered after starvation for 24 hours.—E. Eden.

Liégeois, F. & Derivaux, J. (1950). L'ostéofibrose rénale du chien. [**Osteofibrosis of the dog.**]—*Ann. Méd. vét.* **94**, 243-258. 3798

The authors stated that the occurrence of osteofibrosis with chronic uraemic nephritis is common in dogs. It is accompanied by hyperphosphataemia, hypophosphaturia, acidosis, and hypertrophy of the parathyroids. Pathogenesis was discussed in detail. The authors showed that renal lesions are established before changes in the parathyroids, and that hypertrophy of the parathyroids is apparently an attempt to compensate the hyperphosphataemia resulting from a reduction in the renal elimination of phosphates and aggravated by liberation of phosphates from bone.—Roy Mack.

Christian, J. J. & Ratcliffe, H. L. (1952). **Shock disease in captive wild mammals.**—*Amer. J. Path.* **28**, 725-737. [Authors' summary copied *verbatim.*] 3799

Fourteen instances of death of captive wild animals from shock disease are reported. The animals, carnivores of small to medium size, are naturally adapted to lives of sustained and often violent activity. All of them died after being subjected to relatively minor stress, such as being transferred to new quarters or being disturbed by repairs to adjacent cages. Survival time after stress varied from a few hours to 2 days. Ten of the animals were under observation at the time of death, and are known to have died during a convulsive seizure. At necropsy all animals of the group were well nourished, if not exceedingly fat. In all of them lymphoid tissues were hyperplastic, the adrenal

glands and the hearts were small, and the livers were reduced in size, and dark. Histologic examination indicated that the glycogen stores of the liver were exhausted, and that the middle and inner zones of the adrenal cortex were hypoplastic. This evidence suggests that the immediate cause of death was hypoglycemia. Hypoglycemia, in these animals, reflected their inability to respond normally to sustained stimulation because their adrenal cortices and, in some instances, their pituitary bodies had undergone partial atrophy through inactivity. Thus in them, shock disease resulted from an adjustment to inactivity, whereas in free wild animals the condition develops when environmental demands exceed maximum native capacities.

I, II & III. Lo, C.-S. (1948). **Some infectious diseases of domestic animals in China. II. Horses. IV. Sheep and goats. V. Dogs and cats.**—*J. Amer. vet. med. Ass.* **112,** 436-437; **113,** 272-274 & 472-474. [For part I, see *V.B.* **18,** 377.] **3800**

I. This note records the general prevalence of glanders and strangles. Tetanus occurs frequently. Surra occurs in western Yunnan. Anthrax occurs sporadically and in the South, equine epizootic lymphangitis is occasionally found. Other diseases also reported, little, however, being known of their distribution, are: dourine, piroplasmosis, equine contagious pleuro-pneumonia, rabies, equine influenza and equine infectious anaemia. Four cases of glanders were treated with sulphonamide preparations, but there was no curative action.

II. In North-West China sheep pox appears to be well known and contagious ecthyma and infectious pleuro-pneumonia are prevalent in goats. Caseous lymphadenitis is usually found only at P.M. examination and the existence of anthrax, haemorrhagic septicaemia, tetanus, F. & M disease and rabies is known in both species. In sheep malignant oedema and piroplasmosis have been noted. Natural cases of rinderpest are not known in either sheep or goats and there is no record of TB. or actinomycosis in these animals.

III. Canine leishmaniasis is found in the same areas as human leishmaniasis; antimony preparations are not effective in dogs. Canine distemper and infectious feline enteritis are prevalent in all parts of the country as also is rabies. Venereal sarcoma is common in pure bred dogs. Aujeszky's disease is believed to have been found in a cat.—K. G. Towers.

Bushnell, L. D. & Erwin, L. E. (1949). **Antitryptic action of chicken pus.**—*Poult. Sci.* **28,** 3-7. **3801**

Pus in fowls is invariably caseated and is not as readily absorbed as in mammals. The authors found that fowl pus contained appreciable amounts of an antitrypsin substance.

—P. H. Herbert.

Schalm, L., Schulte, M. J., Bax, H. R., Miete, M., Mansens, B. J. & Rodrigues Pereira, A. (1952). **The regenerative power of the liver and its reserve capacity for excreting bile. Their possible significance in surgical treatment of biliary obstruction.**—*Lancet.* **262,** 75-81. [Authors' summary copied *verbatim.*] **3802**

Experiments with rabbits and pigs have shown that deprivation of large parts of the liver of biliary drainage did not give rise to jaundice and was compatible with life and good health. The occluded areas did not drain their bile, if produced, by means of intrahepatic biliary anastomoses. Probably the secretion of all the bilirubin was accomplished by hyperfunction of the liver tissue left with free biliary drainage. The occluded areas underwent gradual atrophy, with compensatory hypertrophy of the areas with free biliary drainage. Probably these findings can be applied to man. If so, they can be put to practical use in surgery: (1) One branch of the hepatic duct may be cut at the hilus of the liver and used for plastic operations with the common bile-duct. (2) Anastomosis with one of the hepatic ducts is a completely satisfactory operation. (3) One branch of the hepatic duct may safely be sacrificed if the operation entails it.

Ungar, J. & Muggleton, P. W. (1952). **Accumulation of diethylaminoethanol ester of penicillin in inflamed lung tissue.**—*Brit. med. J.* June 7th, 1211-1213. [Authors' summary copied *verbatim.*] **3803**

Experiments on laboratory animals have shown that: (1) diethylaminoethylbenzyl-penicillinate hydriodide (estopen) is selectively concentrated in lung tissue, particularly when inflamed, the degree of accumulation being related to the extent of the lesions. (2) Selective accumulation is more pronounced with estopen than with procaine penicillin or the sodium salt of benzyl-penicillin. (3) The factors involved in this accumulation include the different chemical properties of the drug used and the specific feature of lung structure and function.

Ast, D. B., Finn, S. B. & McCaffrey, I. (1950). **The Newburgh-Kingston caries**

fluorine study. I. Dental findings after three years of water fluoridation.—*Amer. J. Publ. Hlth.* **40**, 716-724. **3804**

Data from animal experimentation and laboratory studies support the conclusion indicated by these investigations, namely that there is an inverse relationship between the prevalence of dental caries in human beings and fluorine, if the fluorine is ingested during the period of tooth development. It is also stated that when about 1 p.p.m. fluorine is ingested from water supplies with a natural fluorine content during the period of tooth development, we may expect to see about six times as many children free from dental caries as compared with children using fluorine-free water supplies. We may also expect the incidence of dental caries to be reduced by 60% and the first molar loss by 75%, without the deleterious effects of mottling which results when higher concentrations of fluorine are present.

The experiments were made in 1945 when sodium fluoride was added to the water supply of the city of Newburgh to bring its fluorine content up to 1·0–1·2 p.p.m. The results so obtained were compared with the position in the city of Kingston, to the water supply of which no fluorine was added. It is expected that the study will take 10-12 years to determine adequately the efficacy and safety of the caries prophylactic measures. Approximately 3,400 children are included in the Newburgh experiment, and 3,800 are represented in the Kingston data.

The conclusions so far arrived at are:—The decayed, missing or filled tooth rate for permanent teeth now shows a consistent downward trend in Newburgh from 21·0–14·8 per 100 permanent teeth, representing a saving of 30% and there has been a saving of 18% of the first molars.—D. S. Rabagliati.

Rausch, R. (1950). **Observations on histopathological changes associated with starvation in Wisconsin deer.**—*J. Wildl. Mng.* **14**, 156-161. **3805**

Details are given of a histopathological study made on five starving deer and fawns collected in March, 1948. At this time of the year deer suffer most severely from food shortage, and severe losses from starvation occur. It appears that public antagonism is such that artificial control of the deer population is rarely put into practice even when deemed to be necessary by wildlife officials.

An earlier investigation involving P.M. examinations of 20 deer found dead from starvation did not reveal any lesions of verminous bronchitis, despite the presence of large numbers of *Protostrongylus*. In the five cases now reported there were numerous retrogressive changes, including the following: abundant haemosiderin in the spleen of the fawns; marked decrease in the amount of fat in the bone-marrow; rarity of haemopoietic cells in the bone-marrow; reduction in the number and size of follicles in the spleen; deposition of acidophilic granular material in Bowman's space and in the proximal convoluted tubules of the kidneys; cellular hypertrophy of Bowman's capsule; and fatty degeneration of the heart. There was not any evidence of pneumonia, verminous or otherwise.

The only commonly observed helminth, apart from the lungworms, was *Ostertagia odocoilei*. Some of the animals were heavily infested with a louse, *Cervicola virginianus*.

—Alastair N. Worden.

See also absts. **3873** (animal pathology in French West Africa); **3902** (nervous symptoms in chondrodystrophic dogs); **3938** (textbook of pathology); **3939** (book, global epidemiology).

POISONS AND POISONING

Bull, L. B. (1951). **The occurrence of chronic copper poisoning in grazing sheep in Australia.**—*Proc. Spec. Conf. Agric., Aust.* 1949. 300-310. London: H.M. Stat. Off. 20s. **3806**

B. reviewed investigations on chronic copper poisoning in grazing sheep in Australia. The criteria by which chronic copper poisoning in sheep is recognised are haemoglobinuria, haemoglobinaemia, icterus, necrosis of the liver, kidney dysfunction leading to uraemia, and a copper concentration in the liver usually higher than 1,000 p.p.m. on a dry matter, fat-free basis.

Copper poisoning has been recognised in Australia under a number of different soil, pasture and climatic conditions. In the Lachlan River valley in New South Wales there are soils that have a high copper content, and the pastures growing on them are also high in copper. In such areas copper poisoning appears to be due to a high gross intake of copper by grazing sheep. In other areas of New South Wales and Victoria the copper content of the soil is normal, and special climatic conditions which favour the growth of non-gramineous plants, or a high copper: molybdenum ratio in the diet appear to be important factors in causation.

When sheep are grazed on *Heliotropium europaeum* a special problem seems to arise in that this plant contains at least one hepatotoxic alkaloid, lasiocarpine, which produces diffuse necrosis and fibrosis of the liver. Sheep grazing in areas where heliotrope is prevalent may also acquire a high copper status and develop chronic copper poisoning; thus it is necessary to distinguish between simple heliotrope poisoning and heliotrope poisoning complicated by copper poisoning. Besides molybdenum other mineral elements such as ferrous sulphide and calcium carbonate will suppress copper assimilation and storage. When sheep are grazed on copper deficient areas and given large supplements of copper, a much longer period of time elapses before chronic copper poisoning occurs. It is suggested that in such areas the diet contains substances which prevent the assimilation and storage of copper.—J. D. Steel.

Udall, D. H. & Keller, K. P. (1952). **A report on fluorosis in cattle in the Columbia River Valley.**—*Cornell Vet.* 42, 159-184. 3807

Fluorosis occurred in the vicinity of an aluminium factory in Oregon and the authors examined many and various cattle affected in several herds. They reported that in each herd the condition was characterized by some of the following: chronic diarrhoea, anorexia, poor growth of home reared young stock, infertility affecting both sexes, osteomalacia and dental changes. These latter were considered diagnostic for animals grazed in the area during the eruption of their teeth, but mature animals introduced to the area never developed dental changes. Toxic doses and previous reports were discussed.—John Seamer.

Thorvaldson, T. (1951). **The selenium problem in the Great Plains Region of North America.**—*Proc. Spec. Conf. Agric., Aust.* 1949. 310-316. London: H.M. Stat. Off. 20s. 3808

T. reviewed studies on selenium intoxication in North America. It has been shown that soils vary considerably in their content of selenium and its availability to plants. Some plants, e.g. *Astragalus pectinatus* ("loco weed") accumulate selenium and thrive best on seleniferous soils.

The toxicity of selenium compounds in different species of animals was discussed. Ingested selenium is stored in the hair and organs, and excreted mainly in the urine and faeces. High protein diets give some protection against selenium poisoning, and the addition of arsenic to the drinking water provides partial to complete protection, depending upon the conditions of experiment. Only a few cases of selenium poisoning in man are on record. Selenium poisoning is less important on the Canadian prairies than in the U.S.A. Bulk cargoes of Canadian wheat are unlikely to contain toxic quantities of selenium.—J. D. Steel.

Reihart, O. F. & Reihart, H. W. (1952). **Accidental warfarin poisoning of young pigs: a hematological report.**—*Vet. Med.* 47, 372-374. [Authors' summary slightly modified.] 3809

Fifty-six of 120 pigs died from accidental warfarin poisoning through contamination of mill prepared feed. Death occurred as the result of hemorrhages due to prothrombin deficiency. The fatal cases occurred principally in those animals which either had been castrated or bruised by rough handling. It was not possible to determine the dosage of warfarin which the animals received. However, some of the pigs had access to the contaminated feed daily for as long as 12 days.

Failure to clean a mixer following its use for warfarin may leave an amount of the substance in the machinery sufficient to contaminate subsequently prepared feed mixture.

Laboratory data were presented to demonstrate the cause of the coagulation deficiency.

Klausman, B. S. & Brown, H. W. (1952). **Report of a series of deliberate warfarin poisonings: suggested treatment.**—*Vet. Med.* 47, 235-238. 3810

"Warfarin" [3-(α-phenyl-β-acetylethyl)-4-hydroxycoumarin] is being used as a rat poison. It increases the clotting time of the blood and the animals die from haemorrhages. The authors reported the malicious poisoning of 54 dogs with this drug and described the results of the administration of koagamin (a haemostatic preparation from the plant, shepherd's purse) and stated that 47 of the animals recovered.

—N. Dean.

Wolff, R., Royer, P. & Karlin, R. (1951). Taux de la vitamine B_{12} dans le foie d'animaux intoxiqués par le tétrachlorure de carbone. **[Vitamin B_{12} content of the liver in animals poisoned with carbon tetrachloride.]**—*C.R. Soc. Biol., Paris.* 145, 991-994. 3811

The authors studied the toxicity of carbon tetrachloride. Toxic effects are produced most rapidly when the drug is administered by inhalation; they are produced more certainly by ingestion than by injection. Young animals are more susceptible than adults. In animals so

poisoned the vitamin B_{12} content of the liver is lowered and there is fatty degeneration.

—F. R. Harris.

Barnett, A. J. G. (1952). **Decomposition of nitrate in mixtures of minced grass and water.** [Correspondence.] — *Nature, Lond.* **169,** 459. 3812

The production of nitrite from nitrate inhibits lactic acid formation in a minced grass and water slurry; when the nitrite is subsequently decomposed yielding nitric oxide, the lactic acid fermentation is resumed. The organism responsible for the nitrate to nitrite reaction is probably a facultative aerobe; the reaction proceeds much more completely in an aerated than in an anaerobic mixture.

—R. Marshall.

Pritchard, W. R., Rehfeld, C. E. & Sautter, J. H. (1952). **Aplastic anemia of cattle associated with ingestion of trichloroethylene-extracted soybean oil meal (Stockman disease, Duren disease, Brabant disease). I. Clinical and laboratory investigation of field cases.**—*J. Amer. vet. med. Ass.* **121,** 1-8. [Authors' summary slightly modified.] 3813

Outbreaks of aplastic anaemia in cattle associated with the ingestion of trichloroethylene-extracted soya bean oil meal were reported and the main clinical and laboratory features were described.

Robin, V. (1951). Les intoxications végétales. **[Plant poisoning of livestock.]** — *Rec. Méd. Vét.* **127,** 733-766. 3814

In a discursive article written for practitioners R. gave a provisional clinical classification that might be used for the diagnosis of poisoning in animals by forage or plants not normally highly poisonous. For this purpose, he described illness from such poisoning under the following heads:—(a) acute cases with no symptoms preceding death; (b) cases in which either the nervous system, the digestive system, the liver, the respiratory system, the heart, the urinary system, the genital system, the locomotor system, or the skin are affected, and (c) cases involving haemorrhagic effects and anaemia.—R. Marshall.

Henderson, J. A., Evans, E. V. & McIntosh, R. A. (1952). **The antithiamine action of equisetum.**—*J. Amer. vet. med. Ass.* **120,** 375-378. [Abst. from authors' summary.] 3815

Two of three horses that had contracted *Equisetum* poisoning were treated with daily subcutaneous injections of 100 mg. of thiamine hydrochloride for four days, and responded favourably. A two-year-old colt fed for 35 days on a ration consisting solely of *Equisetum*-containing hay from the pasture on which these horses had been grazing developed a similar syndrome. Thiamine injections begun after the animal was unable to rise failed to bring about recovery. *In vitro* experiments demonstrated that the *Equisetum* hay caused an almost complete destruction of pure thiamine and of the thiamine content of oats and dried brewer's yeast. This destruction is probably related to enzyme action.

Newton, L. G. (1952). *Gomphrena celosioides* **—a plant causing ataxia in horses.**—*Aust. vet. J.* **28,** 151-154. 3816

An ataxia syndrome has occurred in horses on the coastal areas of Queensland for some years. Most cases occur when the animals graze on pastures dominated by a weed, *G. celosioides*. A clinical picture indistinguishable from that occurring naturally has been produced by feeding this plant, but only after considerable quantities have been consumed. P.M. appearances have not been constant, but no examination of the nervous system or biochemical data were recorded.—D. C. Blood.

Bell, A. T. & Hall, W. T. K. (1952). **Birdsville disease of horses. Feeding trials with** *Indigofera enneaphylla*.—*Aust. vet. J.* **28,** 141-144. 3817

"Birdsville disease" was produced experimentally in two horses by feeding *I. enneaphylla,* some hundreds of miles from the area in which the disease is endemic. At autopsy an apparent disappearance of nerve fibres and proliferation of connective tissue in the peripheral nerves were thought to be significant, but similar changes were found in horses not affected with "Birdsville disease".—D. C. Blood.

Matsumote, H., Smith, E. G. & Sherman, G. D. (1951). **The effect of elevated temperatures on the mimosine content and toxicity of koa haole (*Leucaena glauca*).**—*Arch. Biochem. Biophys.* **33,** 201-211. [Abst. in *Nutr. Abstr. Rev.* **21,** 945-946. (1952), copied *verbatim.* Signed: G. F. Garton.] 3818

Samples of chopped koa haole leaves were stored at temperatures of 40°, 50°, 60°, 70°, 80°, 90° and 100°C., one sample was allowed to dry in air at room temperature and another was dried in a forced-draught oven at 70°C. Analyses were made for mimosine before and at regular intervals during treatment. Immature and mature seeds were stored at 70°C. for 48 hr., dried and analysed; controls were dried immediately after collection. Samples of leaves

were also steamed, drained, dried and analysed; as were the condensates from all treatments. Feeding tests were made on groups, each of 4 male and 4 female albino rats, which received to appetite a control diet or a heated or unheated koa haole leaf meal diet.

The most pronounced and rapid decrease in the mimosine content of the koa haole leaves occurred when they were heated to over 70°C. in the presence of moisture; no reduction took place in the dry leaves. A similar effect occurred in the seeds when sufficient moisture was present and when the leaves were steamed. Heated koa haole leaf meal was less toxic to rats than the unheated meal. The development of alopecia in rats given the unheated meal is described, and the growth curves of groups on heated or unheated leaf meals are compared.

The addition of 3 per cent. ferrous sulphate to an unheated koa haole leaf meal diet reduced the toxicity of the mimosine.

GORDON, W. C. & HENDERSON, J. H. M. (1951). **The alkaloidal content of blue lupine** (*Lupinus angustifolius L.*) **and its toxicity on small laboratory animals.**—*J. agric. Sci.* **41,** 141-145. [Abst. from authors' summary.] **3819**

A method of extraction and isolation of the alkaloid of blue lupin was adopted for small samples of the various plant parts: seeds, leaves and pods.

The seeds contained a higher percentage of crude alkaloid, than the leaves and pods, the findings being 2·25%, 0·69%, and 1·46%, respectively.

The alkaloid isolated was identified as D-lupanine.

In toxicity determinations, involving the injection of water solutions of the crude free base, hydrochloride salt and the pure free base, administered intraperitoneally in g. pigs, rats and mice, mice were most susceptible, rats less so, and g. pigs least so. The minimal lethal dose (M.L.D.) was given for all three species of animals, and in addition the 50% lethal doses $L.D._{50}$ were given for mice, the purest samples being the most toxic.

The symptoms observed in the three species were similar. Gross pathology of the animals killed indicated death by asphyxiation.

LEONHARDT, H. (1951). Über Vergiftungen durch brandpilzsporenbefallene Simsen (Scirpus). **[Poisoning of domestic animals with a reed** (*Scirpus sylvaticus*), **infested with** *Ustilago* **spores.]**—*Berl. Münch. tierärztl. Wschr.* No. 9. pp. 179-180. **3820**

L. described the differences in the symptoms of poisoning by *S. sylvaticus* infested by *Ustilago* spores and those commonly ascribed to water hemlock. He described cases of sudden death in a horse and cattle having access to *Ustilago*-infested *Scirpus*. The plant itself is harmless and cases occur in June when the spores are ripe. The toxin first attacks the heart (tachycardia) and in the horse examined its effect extended to the central nervous system. No lesions were demonstrable. The horse was treated with 'lentin' (carbaminoylcholine) to slow down the heart action, 5-6 litres of milk and 25 g. potassium bromide daily for four days. Caffeine was ineffective.

—K. J. SINCLAIR.

SELZER, G. & PARKER, R. G. F. (1951). **Senecio poisoning exhibiting as Chiari's syndrome. A report on twelve cases.**—*Amer. J. Path.* 27, 885 - 907. [Abst. from authors' summary.] **3821**

The illness in 12 human beings here reported was attributed to the eating of bread made from imperfectly winnowed wheat, it being assumed that *S. burchelli* and *S. ilicifolius* had been included in the wheat from which the flour was made.

The human lesion was, in most respects, closely similar to the lesions of senecio poisoning in rats and horses. There appeared to be some differences in the action of the toxins which were dependent upon the animal species concerned.

I. BURDIN, M. L. & PLOWRIGHT, W. (1952). **Investigations into delayed toxicity due to dimidium bromide. III. Some experimental observations in ruminants.**—*J. comp. Path.* 62, 178-188. [Authors' summary copied *verbatim.*] **3822**

II. PLOWRIGHT, W. & BURDIN, M. L. (1952). **Investigations into delayed toxicity due to dimidium bromide. IV. Effect of high dosage levels of dimidium bromide in cattle.**—*Ibid.* 189-195. [Authors' summary modified.] **3823**

I. The administration of dimidium bromide in a dosage of 2 or 3 mg./Kg. to normal Zebu-type cattle regularly produced liver dysfunction.

Biochemical evidence of this dysfunction was provided by the appearance of a direct Van den Bergh reaction at about day 40. Weight records together with serial estimations of non-protein nitrogen and alkaline phosphatase indicated a disturbance beginning at about the same time.

The dysfunction was associated with periportal degeneration of the liver, at first largely of a hydropic type, but rapidly becoming fatty.

Residual lesions were slight. The possible relationship to conditioned deficiencies of essential metobolites is discussed.

II. The delayed reaction which follows the administration of dimidium bromide to cattle can take one or two forms which clinically, biochemically and pathologically are quite distinct. Both have their onset, as determined by serial biopsies, at some time about the end of the fifth week following inoculation, and are characterized by fatty infiltration of the liver.

The type of reaction does not seem to depend solely on the dosage; animals which had received up to 3 mg. per kg. consistently showed the more prolonged type with positive direct Van den Bergh reactions, elevated serum alkaline phosphatase and a well defined periportal lesion.

Above this level results were inconsistent. For example, one animal, which received 15 mg. per kg., showed this kind of response but two of four animals, which received a total of 6 mg. per kg. over a period of six weeks, developed a diffuse liver lesion resembling that seen in animals at a higher dosage level.

The second type of reaction was accompanied by no rise in serum alkaline phosphatase and the van den Berg reaction, if positive, was a delayed direct one, indicative of toxic rather than obstructive jaundice. Animals with this type of reaction were usually dead or *in extremis* by about the 45th day and there was often a terminal coma; on the other hand, where the lesion was periportal and a positive direct van den Berg reaction might develop, the animal commonly survived until at least the 48th to 50th days and might even recover.

The effect of small doses of dimidium bromide, administered intravenously at frequent intervals, was the same as that of a single large dose. There was no reduction in the "latent" period and, except in one case, the lesions were identical with those caused by a single massive dose. In this one case there was evidence of a commencing fine portal cirrhosis.

ROINE, P. & ETTALA, T. (1952). **Toxicity of aureomycin to guinea pigs.** [Correspondence.]—*Nature, Lond.* **169,** 1014. 3824

Aureomycin fed at a level of 100 mg. per kg. ration promoted growth in rats, but was highly toxic to g. pigs, causing death of six out of nine within ten days.—N. DEAN.

PETERS, R. A. (1952). **British anti-lewisite. I. The biochemistry of arsenic. II. Dithiols as antidotes.**—*J.R. Inst. publ. Hlth.* **15,** 89-103 & 122-139. [Author's summary modified.] 3825

I & II. Trivalent arsenical compounds are toxic mainly because they combine with SH groupings essential for the activity of the enzyme systems oxidising pyruvate, the three-carbon intermediate in carbohydrate metabolism, thus preventing this stage from being carried out. This attack is believed to be exerted upon the enzymes situated within the mitochondria inside the tissue cells concerned. The details of this combination of SH groups with arsenicals vary with different substances; disubstituted and monosubstituted arsenical compounds behave differently. Substances of the latter type, like lewisite, make stable compounds with SH components of the enzymes by combining to form ring compounds.

DUNCAN, C. (1951). **A case of toadfish poisoning.**—*Med. J. Aust.* Nov. 17th, 673-675. 3826

Spheroides liosomus, a fish common in Tasmanian waters, contains a fast-acting toxin which caused fatal illness with vomiting in a boy as well as in cats and fowls which ate the fish.—N. DEAN.

BOHMAN, V. R., CHI, I.-L. A., HARRIS, L. E., BINNS, W. & MADSEN, L. L. (1952). **The effect of DDT upon the digestion and utilization of certain nutrients by dairy calves.**—*J. Dairy Sci.* **35,** 6-12. [Authors' summary modified.] 3827

As D.D.T. is used for pest control on alfalfa crops, digestion and balance trials were conducted in 16 Holstein bull calves. Each calf was fed one level of D.D.T. and four levels of protein equivalent. The D.D.T. levels were 0, 25, 50 and 100 p.p.m. of the diet and the protein equivalent levels were 10·2, 12·4, 14·5 and 16·5% in the dry diet respectively.

Symptoms consisting of skin wrinkling, thickening of the skin, profuse scaling, thinning of the hair, lachrymation, watery discharge from the nose and tremors were noticed. These symptoms were more pronounced in the calves fed the highest levels of D.D.T.

As the D.D.T. in the diet increased the amount of nitrogen stored decreased. The Ca and P balances were not affected. D.D.T. did not affect the digestibility of organic matter, crude protein, ether extract, cellulose, lignin, crude fibre and other carbohydrates. The addition of urea to the diet improved the digestibility of crude fibre and cellulose but did not affect the digestibility of the other nutrients.

CORKILL, L. (1952). **Cyanogenesis in white clover (*Trifolium repens* L.) VI. Experiments**

with high-glucoside and glucoside-free strains. —*N.Z. J. Sci. Tech.* Sect. A. 34, 1-16. [Abst. from author's summary.] 3828

A non-cyanogenetic strain of white clover has been produced which is free from the glucoside lotaustralin but contains the enzyme linamarase. This clover is equal in production to the strongly cyanogenetic New Zealand certified pedigree strain and superior to certain other New Zealand strains.

An experimental strain of a very strongly cyanogenetic white clover has been produced. Analyses on leaves have shown it to contain up to 0·035% HCN. Observations on the palatability to sheep of this and other strains were described, and the possible effect on animal thrift was discussed.

See also absts. 3777 (wild cabbage causing anaemia and haemoglobinuria in dairy cattle); 3782 (selenium poisoning); 3867-3869 (food poisoning); 3930 ("doping" of racehorses); 3936 (report, U.S.A.).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

SCHULER, W. & MEIER, R. (1950). Der Kobalt-Antagonismus der antibakteriellen 8-Oxychinolin-Wirkung in Atmungsversuchen. **[Antagonistic effect of cobalt on the antibacterial action of 8-oxyquinoline.]**—*Schweiz. Z. allg. Path.* 13, 463-469. [English, French and Italian summaries. English summary modified.] 3829

8-oxyquinoline loses its antibacterial action on staphylococci and *Bact. coli* when mixed with cobalt chloride in a molar concentration ratio of 1 : 0·6 before coming into contact with the bacteria. When the two substances were introduced separately but simultaneously into the bacterial culture, or when cobalt was added after oxyquinoline had exerted a marked action on the bacteria, the antagonistic effect of the cobalt could be demonstrated only in the case of *Bact. coli;* in such experiments a molar concentration ratio of 1 : 0·9 was necessary.

The experimental evidence indicates that the cobalt-oxyquinoline antagonism is due to a chemical reaction between them which competes with the reaction between oxyquinoline and its bacterial receptor, and that the receptors of the two bacterial species tested are distinct in quality.

DEAN, A. C. R. & HINSHELWOOD, C. (1952). **The resistance of *Bact. lactis aerogenes* to proflavine (2:8-diaminoacridine). I. The applicability of the statistical fluctuation test.** —*Proc. R. Soc.* Ser. B. 139, 236-250. [Authors' summary modified.] 3830

BASKETT, A. C. (1952). **The resistance of *Bact. lactis aerogenes* to proflavine (2:8-diaminoacridine). II. The direct induction of adaptation.**—*Ibid.* 251-262. [Author's summary modified.] 3831

I. The number of colonies of *Bact. lactis aerogenes* appearing on solid media containing proflavine under different conditions was determined. The statistical variation was greater with samples taken from different cultures than with the same number taken from a given culture. This might appear to correspond to the Luria-Delbrück criterion that the resistant colonies are formed from spontaneously appearing mutants in the cultures under test.

It was pointed out, however, that this greater variation might in the present example depend equally well upon other factors than mutations, since separate cultures cannot be so closely controlled as any single culture in respect of age, pH and degree of aeration. The effects of these factors were studied, and it was shown that varying efficiency of aeration has a specially marked influence on the number of resistant survivors.

It was shown, moreover, that there is a competition between the development of resistance and death of the population, and that the time at which the last surviving cell in a proflavine culture can be detected itself shows a very great variation. Thus the variation in the colony number can be a function of survival rather than of mutation. The form of the curve showing the initial decline of population followed by growth of resistant survivors is difficult to reconcile quantitatively with a simple form of the mutation hypothesis.

II. The adaptation of cultures of *Bact. lactis aerogenes* to proflavine was examined in the light of the theories of selection and induced adaptation.

As is already known the presence of proflavine increases the lag before growth, and reduces the number of colonies formed by unadapted cells in a solid medium. Fractions of mutants calculated on the selection theory from these two effects are very different, particularly in the concentration range where growth is completely inhibited in liquid medium but not in solid medium.

Adaptation is very greatly accelerated if the drug is added gradually to an actively growing

culture. Cells can become adjusted to concentrations which are normally completely inhibitory to unadapted cells subcultured into liquid medium in times too short for any appreciable selection to occur. The interaction of drug and cell clearly brings about adjustments which enable growth to occur under previously inhibitory conditions. The rate of adaptation is dependent on the metabolic activity of the culture. When growth is halted in the presence of proflavine the reducing power declines steadily. Such secondary decay processes are probably responsible for the major efforts of inhibition both in solid and in liquid media.

The study of filament formation confirmed that most cells rather than selected mutants do, in fact, grow in gradually increasing concentrations of proflavine.

DENISE, J. (1951). Antibiotiques des végétaux supérieurs. **[Antibiotic substances from the higher plants.]**—*Thesis, Alfort.* pp. 53. **3832**

D. reviewed work on antibiotics from higher plants and discussed techniques of extraction and examination.—P. H. HERBERT.

EDWARDS, S. J. (1952). **A study of the *in vitro* and *in vivo* action of certain antibiotics.**—*J. comp. Path.* **62,** 220-236. [Author's summary copied *verbatim.*] **3833**

A study of the *in vitro* and *in vivo* activity of penicillin, aureomycin, nisin and streptomycin against various Gram-positive and Gram-negative organisms associated with bovine mastitis was made. Their action, as well as that of chloromycetin, was also tested against a strain of *Salm. dublin.*

Penicillin alone of the antibiotics tested possessed marked bactericidal activity especially against Gram-positive organisms.

When the bacteriostatic action of these antibiotics was assessed by a serial dilution method in Hartley broth, the Gram-positive organisms were sensitive in various degrees to penicillin, aureomycin and nisin but were comparatively resistant to streptomycin. Of the Gram-negative organisms, *Bact. coli* was sensitive only to aureomycin and streptomycin while *Salm. dublin* was inhibited by aureomycin and chloromycetin.

The *in vivo* action of the antibiotics was tested against four different experimental infections in mice using a standard dose of 50 mg./kg. or a variation of this dose at the time of injecting culture.

The protective action of the antibiotics against these infections was inversely related to the number of organisms in the test inoculum.

There was no strict correlation between the the *in vitro* sensitivity of organisms and susceptibility *in vivo* when a standard dose of 110×10^6 organisms per ml. was inoculated into mice. For this reason it is suggested that an *in vivo* test should be used to confirm the selection of antibiotics for therapeutic use in clinical infections.

SELYE, H. & JACOB, B. (1952). **On the effect of various steroids upon the extra-adrenal thymolytic action of ACTH.**—*Acta endocr., Copenhagen.* **9,** 333-336. [Authors' summary modified.] **3834**

Experiments on male, adrenalectomized and castrated rats, confirm that the thymolytic effect of cortisone is greatly enhanced by simultaneous treatment with A.C.T.H. Inflammation produced by turpentine does not modify this effect. A.C.T.H. has no action on the thymus in the presence of desoxycorticosterone acetate or oestradiol benzoate.

HÉROUX, O. & BONENFANT, J. L. (1952). Action de l'acide ascorbique sur les effets vasculaires cardio-rénaux de l'acétate de désoxycorticostérone (DCA). **[Action of ascorbic acid on the cardiac and renal effects of deoxycortone acetate.]**—*Canad. J. med. Sci.* **30,** 79-85. [In French. English abst. copied *verbatim.*] **3835**

Earlier investigations have demonstrated that ascorbic acid prevents the hypertensive effect of DCA. Additional experiments on rats have shown that a combination of ascorbic acid and DCA results in stunted growth but does not prevent the renal hypertrophy or renal and vascular lesions usually caused by injection of DCA alone. It has also been observed that no cardiac or renal lesions occur in adrenalectomized DCA-treated rats. In normal animals, 17 days after treatment with DCA, vascular lesions are much larger and much more numerous in the heart than in the kidneys. Other workers have shown that cortisone in combination with DCA produces the same effects as those observed by the authors in animals treated with ascorbic acid and DCA. This similarity might be explained by assuming that ascorbic acid may act by stimulating the release of cortisone from the adrenal cortex.

HALL, L. W. (1952). **A report on the clinical use of bis (β-dimethylaminoethyl)-succinate bisethiodide ("Brevidil E", M. & B. 2210) during anaesthesia in the dog.**—*Vet. Rec.* **64,** 491-493. [Abst. from author's summary.] **3836**

An account was given of the physical,

chemical and pharmacological properties of bis (β-dimethylaminoethyl)-succinate bisethiodide and of its use in clinical surgery of the dog. It was suggested that with due care it may be of use in orthopaedic, thoracic and abdominal operations.

LOWBURY, E. J. L., TOPLEY, E. & HOOD, A. M. (1952). **Chemotherapy for** *Staphylococcus aureus* **in burns.** — *Lancet.* **262,** 1036-1042. **3837**

Local penicillin and dibromopropamidine both proved of limited value in controlling staphylococcal colonisation of burns, in man. Oral aureomycin (1–2 g. per day) was effective against sensitive strains, but it produced a considerable incidence of resistant strains in a comparatively short time.—G. P. MARSHALL.

See also absts. **3583** (influence of antibiotics on coagulase); **3587** (bacteriostatic properties of milk); **3607** (changes in tubercle bacilli caused by therapeutic agents); **3608** (cortisone); **3628** (dihydrostreptomycin); **3629** (streptomycin); **3633** (control of fowl typhoid with sulphonamides); **3641** (treatment of spirochaete infection in rabbits with bismuth); **3646-3647** (foot rot); **3668-3672** (antrycide); **3673** (diamidinodiphenoxypentane against trypanosomiasis); **3674** (dimidium chloride); **3634** ("dalbeen"); **3688** (effect of *B. mesentericus* culture on fixed rabies virus); **3732** (cortisone); **3739** (dips); **3740** (action of D.D.T. and benzene hexachloride on ticks); **3741** (a benzene hexachloride resistant tick); **3744-3747** (molluscicides); **3752** (hetrazan); **3756** (phenothiazine against hookworms); **3761** (sodium fluoride as an ascaricide); **3766** (arsenamide against filariasis); **3776** (aureomycin for unthrifty pigs); **3779** (effect of penicillin on intestinal flora of fowls); **3810** (warfarin); **3811** (carbon tetrachloride); **3822-3823** (dimidium bromide); **3824** (toxicity of aureomycin); **3825** (B.A.L.); **3827** (D.D.T.); **3882** (action of penicillin on bull semen); **3895** (retention of the placenta); **3897** (solvent and vehicle for oestrogens); **3900** (sulphaguanidine); **3903** (sulphadimidine); **3913** (egg production and aureomycin); **3914** (penicillin and the life cycle in ducks); **3915** (methylthiouracil for fattening of sows); **3940** (dictionary of antibiosis); **3941** (Merck index of chemicals and drugs).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

MIGHORST, J. C. A. & V. D. VEEN, H. E. (1952). Eiweissmetabolismus und Schilddrüsenaktivität beim Hahn (Gallus domesticus). **[Albumin metabolism and thyroid activity in the cockerel.]**—*Acta endocr., Copenhagen.* **9,** 395-406. [In German. Abst. from English summary.] **3838**

Cockerels fed diets containing different amounts of protein were given 50 mg. methylthiouracil a day for ten days.

The activity of the thyroids studied by the histological method of Lever was markedly increased if the protein content of the diet produced maximum growth, *i.e.,* at a level of 10% protein. This finding suggests that the thyroid hormone is necessary in the synthesis of the body proteins from the resorbed amino-acids. A further increase in thyroid activity could be observed if growth of the animals was inhibited by the high protein content of the diet, *i.e.* at a level of 50% protein. This points to a necessity of thyroid hormone for the catabolic reactions in the amino-acid metabolism.

In control cockerels only a slight reaction of the thyroid was observed on a high protein level of the diet.

It is suggested that the action of the thyroid hormone in amino-acid metabolism is related with the maintenance of the equilibrium between protein-anabolism and catabolism.

MIGHORST, J. C. A. (1951). Über den Zusammenhang zwischen Schilddrüsenaktivität und Intensität des Stoffwechsels bei Hähnen. **[Correlation between thyroid activity and intensity of metabolism in cockerels.]**—*Acta endocr., Copenhagen.* **8,** 97-115. [In German. Abst. from English summary.] **3839**

This investigation was carried out to determine whether there is any correlation between histological thyroid activity and the intensity of the metabolism, as measured by oxygen consumption.

M. administered 50 mg. daily of methylthiouracil to cockerels (White Leghorns) and failed to demonstrate either a high histological thyroid activity or a decrease in metabolism.

However, if 25 or 50% protein was added to the meal food maximal histological thyroid actvities could be obtained when methylthiouracil was administered. After ten days the oxygen consumption decreased to 40% of the original value, a nitrogen equilibrium was obtained, and the respiration quotient increased. As methylthiouracil has a definite effect on the thyroid only if the protein content of the diet is sufficiently high, it was concluded that the significance of the thyroid-hormone for protein metabolism is to be found in the amino-acid metabolism rather than in the mobilization of the body-proteins, as is generally believed. In those physiological conditions in which protein-catabolism predominates (protein-free diet) methylthiouracil has only a small effect.

SILVER, M. (1952). **The contribution made by perfusion studies to problems of lactational physiology. I. Perfusion technique. II. Physiological and biochemical studies.**—*Dairy Sci. Abstr.* **14,** 66-75 & 142-162. **3840**

S. reviewed previous work on the physi-

ology, pharmacology, metabolism and innervation of the mammary gland, with especial reference to work in which the isolated organ had been perfused. She pointed out the fallibility of various perfusion techniques in so far as they affect the gland and the experimental results obtained, and suggested that positive results should be compared with those obtained by other methods and that negative results should always be suspect.—JOHN SEAMER.

HOFFERBER, O. (1952). Über Blutgruppen bei Tieren. [**Blood groups in animals.**]—*Mh. Vetmed.* **7**, 46-50. **3841**

A general note on blood grouping in animals.—ROY MACK.

BALAKRISHNAN, C. S. & YERAVDEKAR, S. N. (1950). **Studies in equine blood groups.**—*Indian vet. J.* **26**, 355-363. **3842**

The blood groups of 611 horses were determined by direct agglutination. The value of using serum at a final dilution of 1:4 to avoid rouleaux formation is mentioned, and the necessity of using cell suspensions at a constant strength is emphasized. The groups are labelled A, B, AB and O on analogy with human groups, and more than half the animals tested fell in to group AB; group O was rare. Some of the findings appeared to operate against the application to horse blood groups of Bernstein's theory of inheritance.

— G. FULTON ROBERTS.

HOLMAN, H. H. (1952). **A negative correlation between size and number of the erythrocytes of cows, sheep, goats and horses.**—*J. Path. Bact.* **64**, 379-384. [Author's conclusions and summary copied *verbatim.*] **3843**

With modern methods, the red-cell count is the most tedious and most inaccurate measurement of anaemia or anhydraemia. Various technical errors for which allowance must be made are already well recognised; the additional factor of the actual number of cells being related to the size of the cell in healthy farm animals should further discourage workers with these animals from choosing the red-cell count as their only measurement of the erythrocytic picture.

This investigation shows that a compensatory mechanism exists in healthy cows, sheep, goats and horses by which animals with a low erythrocyte count have corpuscles above average size and those with high counts have corpuscles below average size. Such a negative correlation of number with size can be expressed as a simple straight-line regression. The existence of this correlation must also be borne in mind when diagnosing macrocytic anaemia in these species.

REECE, R. P. & MAN, E. B. (1952). **Serum precipitable and butanol extractable iodine of bovine sera.**—*Proc. Soc. exp. Biol., N.Y.* **79**, 208-210. [Authors' summary amended.] **3844**

Four comparisons (10 sera in each comparison) were made of the serum precipitable iodine (S.P.I.) content of the serum of Jersey and Aberdeen Angus cattle. The average S.P.I. of the Jersey sera was 5·0 μg.%, whereas that of the Aberdeen Angus sera was 4·2 μg.%. In a comparison of the serum of Jersey and Brown Swiss cattle, that of the former was found to be higher in S.P.I. than that of the latter, 4·6 and 3·7 μg.% respectively; the average butanol extractable iodine (B.E.I.) of the sera, however, was identical (2·5 μg.%). The range of S.P.I. for Jersey and Brown Swiss heifers was so great that no comparison is justified; the average B.E.I. was 2·5 μg.% and 3·9 μg.% respectively.

GILMAN, A. R. (1952). **The blood sedimentation rate in the horse.**—*Amer. J. vet. Res.* **13**, 77-82. **3845**

Using Westergren's method and oxalated whole blood, 124 determinations of the sedimentation rate were made on 13 normal horses over a period of 12 months. A considerable variation was found even in the same individual, the sedimentation rate at the end of 10 min. being the only figure of possible statistical significance. At the end of 10 min., the rate varied between 0 and 20 mm. with an average of 5·6 mm. The marked changes in the sedimentation rate of horses with equine infectious anaemia were considered to be the result of changes in red cell volume, for when the rates were corrected for a red cell volume of 42%, no significant change was found during any stage of the disease. G. emphasized that sedimentation rates should be interpreted with caution as the rate is subject to both technical error and numerous variables.

—J. A. NICHOLSON.

WHITE, I. G. (1951). **Blood changes during the adaptation syndrome in sheep.**—*J. Endocrinol.* **7**, 143-153. [Author's summary modified.] **3846**

W. studied the effect of two daily subcutaneous injections of 5 ml. of 4% formalin on the blood constituents of sheep as an "alarm-stimulus" eliciting the adaptation syndrome. Within four days of the start of the injections there were significant hypochloraemia, hypoglycaemia and leucocytosis (primarily a neutro-

philia) with a slight transient increase in both absolute lymphocyte and eosinophile counts, and a return to normal levels after ten days. There was also an intermediate compensatory hyperglycaemia.

When the dose was increased to 10-20 ml. of 10% formalin, the plasma chloride and leucocyte patterns were repeated and there was also an increase in erythrocytes and haemoglobin values. In the later stages of the experiment the absolute lymphocyte and eosinophile counts were depressed, whilst the absolute monocyte count had risen. There were no significant changes in blood acetone or in the basophile count throughout the experiment.

It was concluded that, in general, the blood changes elicited by an alarm stimulus in sheep are similar to those described in small laboratory animals. The renewed response to an increased intensity of stimulus observed in this experiment indicates that resistance is quantitatively as well as qualitatively specific.

LANNEK, N. (1951). **The terminal ventricular complex of the post-block beat in the horse's electrocardiogram.**—*Nord. Vet.-med.* **3**, 425-434. [In English. German and Swedish summaries.] **3847**

It was observed that in the beat immediately following a heart block, the Q-T duration was shortened and the amplitude of the T wave was increased. These changes may be reproduced in normal horses by the injection of adrenalin and disappear after the injection of ergotamine. It was concluded that the Q-T duration is largely dependent upon sympathetic tone and not on the heart rate.

—J. A. NICHOLSON.

LANNEK, N. & RUTQVIST, L. (1951). **Normal area of variation for the electrocardiogram of horses. A statistical examination of extremity leads and unipolar leads.**—*Nord. Vet.-Med.* **3**, 1094-1117. [In English. German and Swedish summaries. Abst. from English summary.] **3848**

A statistical survey showed little variation in the electrocardiogram area according to sex or age in sexually mature horses, but significant differences between heavy breeds (Belgian and North Swedish) on the one hand, and light breeds (American Trotters, English Thoroughbreds and army saddle-horses) on the other. Figures were given for dimensions of PQRST waves from 12 leads.—N. DEAN.

BACQ, Z. M., CHARLIER, R. & KLUTZ, A. (1951). Altérations de l'électrocardiogramme chez le chien après injection intraveineuse d'une petite quantité d'yperites ou de monobromoacétates. **[Changes in the electrocardiogram of the dog after intravenous injection of a small quantity of mustard gas or monobromoacetate.]**—*C.R. Acad. Sci., Paris.* **233**, 639-640. **3849**

The administration of mustard gas in small doses causes flattening of the T-wave of the electrocardiogram in dogs in the same way as monobromoacetate, but the effect appears more rapidly and is of shorter duration.—N. DEAN.

BLAMIRE, R. V. (1952). **The capacity of the bovine "stomachs".**—*Vet. Rec.* **64**, 493-494. **3850**

B. discussed briefly the literature pertaining to the combined capacity of all four of the bovine stomachs. He described experiments to estimate the total "stomach" capacity of 30 cattle slaughtered at an abattoir and gave less detailed estimations on a further series of 47 cattle. The average total capacity of all four stomachs for the first series was estimated at 10·1 gal. The highest estimated capacity was 15 gal. from a cow and the lowest was 3 gal. from a heifer in which the total full stomach weight was only 66 lb.

Accepted standards of total bovine stomach capacity would appear to be excessive.

KIDDLE, P., MARSHALL, R. A. & PHILLIPSON, A. T. (1951). **A comparison of the mixtures of acetic, propionic and butyric acids in the rumen and in the blood leaving the rumen.**—*J. Physiol.* **113**, 207-217. **3851**

Analyses of blood obtained from the posterior vein of the rumen showed that, in sheep, it contained proportionately more acetic and less butyric acid than was present in the rumen. Acetic acid appears to be the principal source of energy which passes from the rumen to the liver in grass-fed sheep. However, in a few animals, the energy represented by propionic and butyric acids was nearly equal to that represented by acetic acid.

—J. A. NICHOLSON.

ANTHONY, J. (1947). Soulèvements corticaux d'origine vasculaire sur le cerveau de l'éléphant. **[Cortical protuberances of vascular origin on the brain of the elephant.]**—*C.R. Acad. Sci., Paris.* **224**, 1179-1181. **3852**

Previous attempts to study the anatomy of the elephant brain have been unsatisfactory owing to the difficulty of fixation. It is possible, however, to fix the brain directly in the cranium. A preliminary study of an adult Indian elephant showed that the cephalic venous system is extremely complex and that the veins running

from the brain to the dura mater cause small areas of the cortex to be raised in the form of cortical papillae which are characteristic of the elephant brain.—J. A. NICHOLSON.

AMOROSO, E. C., BELL, F. R. & ROSENBERG, H. (1952). **The localization of respiratory regions in the rhombencephalon of the sheep.**—*Proc. R. Soc.* Ser. B. **139**, 128-140. [Authors' summary copied *verbatim.*] **3853**

The medulla oblongata of the sheep was explored by means of electrical stimulation in order to localize the points of respiratory reactivity. The stimuli were brief rounded shocks equally spaced at all frequencies employed, of alternating polarity, and of similar shape and voltage. Maximum responses were obtained at a frequency of 250/sec. and of an intensity of 8V. The current spread of effective density appeared not to exceed 0·5 m.m. The maximum responses were consistent and reproducible. At such loci inspiratory or expiratory responses could not be reversed by alterations in rate and/or strength of stimuli.

The reactive loci were identified histologically. Inspiratory and expiratory apnoeas, maintained for the duration (15 sec.) of the test stimulation, were considered to be indicative of so-called centres, i.e. preponderance of cells of an inspiratory or expiratory nature.

Respiratory responses are aggregated in the reticular formation of the medulla oblongata from the level of the acoustic tubercles rostrally to a level just behind the obex caudally. The loci of maximum inspiratory and expiratory aponoeas are separable into clearly defined regions: (1) an inspiratory region which occupies a blunt wedge-shaped volume of the medioventral reticular formation, the base of the wedge being at the obex and the truncated end extending to the cephalad margin of the inferior olive; (2) an expiratory region which covers a larger extent than the inspiratory region and lies dorsal, anterior and lateral to it.

In the sheep the points of maximal cardiovascular and respiratory responses are closely interrelated anatomically but are independent functionally.

Mean values of respiratory volumes in sheep of 22 to 44 kg. were: tidal air 0·20 l., complemental air 0·64 l. and supplemental air 0·19 l., the last two obtained on optimum stimulation. The calculated vital capacity was 1·03 l.

VOGEL, J., RUSSO, E. & DA SILVA, M. I. (1951). Sôbre o líquido cefalorraquiano de "Canis familiaris". (Nota prévia.) [**The cerebrospinal fluid in dogs. (Preliminary note.)**]—*Rev. milit. Remonta Vet.* **11**, 19-26. [Abst. from English summary.] **3854**

Cerebrospinal fluid obtained from 26 normal adult dogs by intrathecal puncture was examined.

The mean fluid pressure was 6 cm. of water with a range of 2–10 cm.; the amount was 4–10 ml. Fifteen out of 21 cell counts in Neubauer's chamber revealed 0–10 leucocytes per cu. mm. (average 5 cells). Concentration of proteins and sodium chloride were 0·002–0·012 and 0·688–0·798 g. per 100 ml. of fluid respectively. Globulins were absent.

SNOOK, T. (1950). **A comparative study of the vascular arrangements in mammalian spleens.**—*Amer. J. Anat.* **87**, 31-77. [Author's summary modified.] **3855**

The splenic vascular channels of the mouse, rat, mole, cat, dog, horse, cow, and man were studied by means of graphic reconstructions made from serial sections impregnated for reticulum. On the basis of these and other studies, mammalian spleens can be divided into two groups: sinusal and non-sinusal. In the former group (rat, g. pig, rabbit, dog, man, squirrel, skunk) the red pulp contains an elaborate anastomosing plexus of true sinues. In the latter group (mouse, mole, cat, horse, cow, pig, weasel, bat) the red pulp contains relatively few branched primordial veins leading from the pulp meshes into collecting veins. Failure to recognize the existence of these groups may account for some of the divergent views which have appeared in the literature.

It is believed that Knisely's (1936) scheme is essentially correct (structurally) for the g. pig and rabbit and, with a few modifications, for the rat, dog and man. The spleens of the mouse, mole, cat, horse, and cow more nearly coincide with the views of MacKenzie *et al.* (1941) on splenic circulation.

Attention is called to the widespread occurrence of the marginal zone and its importance as a filtration centre.

HELLER-STEINBERG, M. (1951). **Ground substance, bone salts, and cellular activity in bone formation and destruction.**—*Amer. J. Anat.* **89**, 347-379. **3856**

Various techniques for the staining of bone salt and ground substance were described. Using a dilute silver nitrate preparation, the reactivity of bone salt is correlated to the darkness of stain. Using the Hotchkiss procedure, granules were demonstrated in osteocytes and osteoblasts: their chemistry was investigated.

Material from rachitic and parathyroid hormone treated rats was studied along with normal bone.

—R. N. SMITH.

HARRIS, G. W. (1951). **Neural control of the pituitary gland. II. The adenohypophysis. With special reference to the secretion of A.C.T.H.**—*Brit. med. J.* Sept. 15th, 627-634. 3857

The first part of this lecture [*V.B.* 22, 1159] dealt generally with control of activity of the pituitary gland. This part dealt particularly with A.C.T.H. Output of A.C.T.H. depends upon connexion of the pituitary with the hypothalamus *via* the hypophysial portal vessels. Barbiturates, which act upon the thalamus, also block A.C.T.H. release. The hypothalamus also mediates in gonadotrophin secretion.

—F. R. HARRIS.

BURNS, M. & CLARKSON, H. (1949). **Some observations on the dimensions of follicles and of other structures in the skin of sheep.**—*J. agric. Sci.* 39, 315-334. [Abst. from authors' summary.] 3858

Data were presented on the volume and other dimensional relations of structures in the skin of four sheep of the Romney Marsh breed, namely a one month old lamb, a 2½ year old ram and two eight year old ewes. All the animals were in good condition when the skin samples were obtained, yet the skin of both ewes contained structures believed to be degenerating follicles.

Details were given of methods developed to measure the volume of follicles and other structures in the skin, with an error of less than 1%, and also the curled length, as distinct from the 'depth', of a follicle. The difference between the length and depth of the majority of the follicles in these samples was less than 10%.

Measurements of total follicle volume showed that in the lamb the follicles occupied a relatively greater volume of the skin than in the adult animals, although their actual volume was much less. The sebaceous glands of the lamb also occupied a greater percentage of the total bundle volume than in the adults, the mean volume of sebaceous gland per follicle being, however, considerably less in the lamb than in the adults.

The area at the skin surface occupied by a follicle bundle was approximately twice as great in the adult animals as in the lamb, but the volume of follicle per unit area of skin surface was similar in the lamb and the ram (approximately 300 cu. μ per sq. μ skin surface); it was less in the ewes, presumably because of the high proportion of short and abnormal follicles in these animals.

Tables were given showing the relationship between follicle depth, follicle volume, follicle bulb volume, papilla volume and area of the fibre at two fixed levels.

The order in which the process of keratinization commences and becomes complete was the same in almost all follicles of the two adults examined, but was different in the lamb. The process of keratinization commenced and finished at a relatively greater depth in deep than in shallow follicles.

No effect of papilla shape on the fibre produced could be discerned from the limited data available, nor was there any indication that particular papilla shapes were peculiar to certain ages or to individual sheep.

Medullation in primary follicles was independent of that in secondary follicles, and amongst the latter, medullation was most pronounced in those nearest the ectal margin of the bundle, *i.e.*, in the early-developed secondary follicles; it is not dependent on follicle size.

DEROM, E. (1945). Recherches expérimentales sur l'innervation vasomotrice de la patte antérieure du chien. **[The vasomotor innervation of the dog's front paw.]**—*Bull. Acad. Méd. Belg.* 10, 427-459. 3859

Observations were made on 40 dogs under chloralose anaesthesia. Vasomotor reactions in the front paw were provoked by direct stimulation of the nerve fibres, by central excitation of the vagus nerve or by bringing carotid sinus reflexes into play, the results being recorded manometrically.

It was concluded that the fibres concerned with vasomotor innervation of the front paw enter the thoracic sympathetic chain by communicating branches of the 4th or 5th to the 9th thoracic nerves inclusively and pass to the corresponding stellate ganglion. From this ganglion some of the fibres pass directly to the corresponding front paw by communicating branches of the 1st thoracic and 1st cervical nerves and thus by the vertebral nerve. The remaining fibres take different routes, and present individual variations. Thus some pass *via* the two branches of the valve of Vieussens and by the cervical vago-sympathetic nerve to pass subsequently by the same route to the stellate ganglion, whence they reach the paw through the medium of the vertebral nerve and its communicating branches with the 8th cervical and the 1st thoracic nerves. In 65% of cases the vasomotor fibres innervating the front paw were

found to derive only from the corresponding superior cervical ganglion.

—ALASTAIR N. WORDEN.

TAYEB, M. A. F. (1951). Les muscles de la tête du chameau. **[The muscles of the head of the camel.]**—*Rev. Élev. Méd. vét. Pays trop.* **4**, 145-149. **3860**

The muscles of the head of the camel resemble in the main those of the horse: some of the few differences allow the two parts of the upper lip to move independently.

—R. N. SMITH.

TAYEB, M. A. F. (1951). L'appareil glandulaire de la tête du chameau. **[The salivary and lymphatic glands of the head in the camel.]** —*Rev. Élev. Méd. vét. Pays trop.* **4**, 151-155. **3861**

In addition to those usually found in the common domestic ungulates there is a zygomatic gland resembling that of the dog and also, in the male, an occipital gland.—R. N. SMITH.

POIJÄRVI, I. (1952). Orientierende Versuche über den Einfluss der Futtergrösse auf die Verweildauer der Futterbestandteile im Magen-Darmkanal der Wiederkäuer. **[Influence of bulk on the movement of ingesta through the ruminant digestive tract.]**—*Maataloust. Aikakausk.* **24**, 35-39. [In German. Finnish summary.] **3862**

Observations on four wethers, fed smaller or larger quantities of hay or hay and bran, with a single dose of Cr_2O_3 as a marker, indicated that the bulkier rations remained in the alimentary tract for a shorter time, as shown by the elimination of their undigested residue.

—E. COTCHIN.

HAHN, P. F., ROUSER, G., BRUMMITT, H., MOOREHEAD, J. & CAROTHERS, E. L. (1952). **The drainage of radioactive silver colloids by the lymphatics following intrapulmonary administration in dogs.**—*J. Lab. clin. Med.* **39**, 624-628. **3863**

Radio-active silver colloids given intrapulmonarily are concentrated by the lymphatic system draining the pulmonary region. They cause necrosis and fibrosis of the lung parenchyma. They may be of use in treating cases where lymphatic metastases are suspected and where pneumonectomy is already indicated.

—N. DEAN.

See also absts. **3890** (histology of the pituitary gland in pregnant goats); **3891** (the adrenal cortex of the mouse in pregnancy); **3901** (ductus arteriosus persistens); **3942** (book, dissection of the cow).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

JEPSEN, A. (1950). De mikrobiologiske forhold i kød og kødvarer. En oversigt. **[Bacteriology of meat and meat products. A review.]** —*Nord. Vet.-Med.* **2**, 721-741. [In Danish.] **3864**

J. discussed the bacteria occurring normally in meat and the bacterial enzymatic processes in meat and meat products.

—H. BOYD.

LANG, K. (1952). Zum Problem der Salmonellen-Anreicherung in der bakteriologischen Lebensmitteluntersuchung. **[The problem of enrichment media for cultivation of *Salmonella* organisms in meat inspection.]**—*Lebensmitteltierarzt.* **3**, 35-37. **3865**

A discussion of methods and literature on the subject.—ROY MACK.

BAUMGARTNER, H. (1951). Die diagnostische Bedeutung der Riesenzellen im Milchsediment. **[Diagnostic value of giant cells in milk sediment.]**—*Mh. Vet.-med.* **6**, 409-413. **3866**

Of material from 116 cases in which giant cells were present in milk sediment, that from 42 could be traced to TB. of the udder and from 58 to udder disease following *Brucella abortus* infection. Giant cells appear in milk sediment in eight out of ten cases of TB. of the udder and are a valuable diagnostic aid for this condition and for the detection of brucellosis. It is not clear whether other diseases of the udder also give rise to giant cells.

—CHARLOTTE M. WOOD.

DACK, G. M. [Ph.D., M.D. Professor of Bacteriology, The University of Chicago.] (1949). **Food poisoning** pp. xi + 184. Chicago, Ill. : The University of Chicago Press. Revised Edit. $3.75. **3867**

This is the second edition of the author's authoritative and most useful book. It covers mainly the microbiological aspects of food poisoning. For a general account it is probably the best book available.

The volume contains nine chapters covering botulism, staphylococcal, salmonella and α-type streptococcal (*Str. faecalis*) infections; chemical poisoning (in general terms); poisonous plants and animals; infections differentiated from food poisoning (*e.g.* dysentery) and the significance of other bacteria in food poisoning. Perhaps the possible association of organisms

not usually looked for in non-specific cases is not emphasized enough, but this is a small point in a book which is well written, free from errors and well printed and produced. The price may seem high but it is not unreasonable.

—MALCOLM WOODBINE.

HAUGE, S. (1951). Stafylokokkforgiftning fremkalt av enterotoksiske stafylokokker fra melk. **[Staphylococcal food poisoning caused by enterotoxic staphylococci from milk.]**—*Nord. Vet.-Med.* **3**, 931-956. [In Norwegian. English and German summaries. Abst. from English summary.] **3868**

An outbreak of food poisoning affecting 12 out of 31 persons who partook of the same meal, was traced to milk used in creamed potatoes. The milk came from two cows, one of which was shedding Group B-streptococci from its udder and the other staphylococci producing α- and β-toxin. The cold unpasteurized milk had been added to the warm mashed potatoes and the whole kept warm for 6½ hours.

—CHARLOTTE M. WOOD.

GARROD, L. P. & MCILROY, M. B. (1949). **Hospital outbreak of enteritis due to duck eggs.**—*Brit. med. J.* Dec. 3rd, 1259-1261. [Authors' summary slightly modified.] **3869**

An account is given of an outbreak of *S. typhi-murium* enteritis involving nursing and other female staff and patients in a large general hospital. The vehicle of infection was a lightly cooked pudding containing duck eggs. The clinical features of the disease were described, together with laboratory investigations and the steps taken to control the epidemic.

WHITFIELD, L. C. (1951). **The veterinary services in the Australian military forces.**—*Aust. vet. J.* **27**, 226-236. **3870**

W. described the establishment and development of veterinary services in the Australian military forces and gave an account of the activities of the veterinary services during the Boer War, and the first and second world wars.—J. D. STEEL.

CARNE, H. R. (1951). **Veterinary research, 1900-1950, at the Veterinary School, University of Sydney.**—*Aust. vet. J.* **27**, 258-262. **3871**

C. gave an account of past and present research in the Veterinary School, University of Sydney.—J. D. STEEL.

PARNAS, J. (1949). Koncepcje organizacji służby i nauki lekarsko-weterynaryjnej w państwach słowiańskich. **[Conception and organisation of medical and veterinary science in Slavonic countries.]**—*Med. weteryn.* **5**, 477-480. **3872**

From 1939-45 the structure of the veterinary services in Poland, Czechoslovakia, Bulgaria and Yugoslavia had been based more or less on those of Germany. The German influence had, however, given place partly to American and partly to Soviet methods.

Thirty Veterinary Colleges have been opened in various parts of the U.S.S.R [no details given] and also numbers of schools with a three-year course for "feldschers". Every large farming establishment now has its own veterinary clinic.

Special Veterinary Branches have been instituted in the Ministeries of Agriculture, Forestry, Health and Food Production and in the Board of Trade to deal with the control of contagious and infectious diseases. A large number of veterinary dispensaries exist throughout the U.S.S.R.

Veterinary science is being modelled on similar lines in all the Slavonic countries.

—JOHN R. MITCHELL.

ANON. (1951). Organisation de la recherche appliquée à la biologie et à la pathologie animales. **[The organization of research in applied biology and animal pathology in French West African colonies.]**—*Bull. Serv. Élev. Industr. anim. A.O.F.* **4**, 23-27. Discussion pp. 28-29. **3873**

The Laboratoire Central de l'Élevage under construction at Dakar, situated in the university centre of the Federation, will be the pivot of veterinary research in French West Africa. The realization of the programme depends on the provision of adequate specialized personnel.

—E. COTCHIN.

STEWART, J. D. (1951). **The history of veterinary education in New South Wales up to 1939.** —*Aust. vet. J.* **27**, 246-249. **3874**

An account of the establishment of the Faculty of Veterinary Science in the University of Sydney and of its development until 1939.

—J. D. STEEL.

ANON. (1950). **Inventories of apparatus and materials for teaching science. Volume III. Technical Colleges. Part I. Veterinary sciences.** pp. 97. Paris: Imprimerie Centrale de Lausanne. 7s. UNESCO publication 568. **3875**

This is essentially a fairly detailed syllabus of the course of instruction at the Alfort Veterinary School and the institute for Tropical Medicine, Alfort, together with a list of scientific apparatus considered necessary for carrying out such courses. Regarding the series of which

this forms a part, the preface states: "It is hoped that these publications will be useful to educators [in war-ravaged and under-developed regions] as reference manuals for selecting essential equipment". Provisional prices are given in American dollars.

There are a number of spelling mistakes, and some minor errors of translation.—E. COTCHIN.

See also absts. **3587** (bacterial properties of milk); **3594** (control of industrial anthrax); **3626** (coliform bacteria in milk); **3804** (caries and water fluoridation); **3810** (warfarin); **3877** (helminth infestation influenced by use of sewage as fertilizer); **3916** (disposal of carcasses); **3936** (report, U.S.A.).

LIVESTOCK HYGIENE

MCMEEKAN, C. P. (1951). **Pasture management studies in relation to dairy production in New Zealand.**—*Proc. Spec. Conf. Agric., Aust.* 1949. 468-481. London: H.M. Stat. Off. 20s. **3876**

The author discussed the unique position of the New Zealand dairy industry which is almost completely dependent upon the utilization of pasture. With a relatively high reliable rainfall and temperate climate, production levels are high, the industry is organized on a seasonal basis with spring calving, and the efficiency of the industry on a labour basis is high. A series of investigations have been commenced to determine the effects of pasture upon the animal, and the effect of the animal on the pasture. The author gave results of some of these studies. Cattle run under controlled and uncontrolled grazing conditions were compared with respect to growth and development of young, production and reproduction behaviour. Studies on food intake and grazing behaviour were also reported.—J. D. STEEL.

SEISER, A. (1950). Verwurmung und landwirtschaftliche Abwasserverwertung. **[Helminth infestation and the use of sewage as a fertiliser.]** Proc. 3rd Convention of German Hygienists and Microbiologists 6th-9th Sept. 1949. Frankfurt.—*Zbl. Bakt. I.* (*Orig.*) **155**, 299-307 of Proceedings. **3877**

S. surveyed certain infestations in man, particularly of *Ascaris* and *Oxyuris*. He also cited the occurrence of "measles" in calves and enteritis in cattle, which held up calf rearing for a considerable time. He discussed short and long term control measures against human infestations, with particular reference to the management of market garden produce.

—M. L. CLARKE.

REPRODUCTION AND REPRODUCTIVE DISORDERS

DUNN, H. O. (1952). **Further studies on the influence of three levels of nutrient intake on the growth and sexual development of young Holstein bulls.**—*Thesis, Cornell.* pp. 164. **3878**

As the title indicates, this is a detailed study to determine the effect on growth and sexual development of the bull when fed subnormal, normal, and supernormal levels of feed intake. The findings emphasize that nutrition can definitely influence the age at which young sires may be used for breeding purposes and hence the age at which fertility and their production "proofs" may be appraised. A summary does not do justice to this excellent piece of research. The 36 illustrations are excellent, and there are 215 references.—H. L. GILMAN.

MELAMPY, R. M., CAVAZOS, L. F. & PORTER, J. C. (1952). **Cytochemical reactions of bovine spermatozoa and seminal plasma.**—*J. Dairy Sci.* **35**, 140-148. [Authors' summary copied *verbatim.*] **3879**

By using accepted cytochemical techniques the following reactions were observed in bovine spermatozoa: Acid phosphatase was present throughout with a slight reaction in the equatorial segment when sodium glycerophosphate was used as a substrate at pH 5·0. Alkaline phosphatase was present, with the exception of the neck, when the same substrate was employed at pH 9·0. Enzymatic activity was found in the neck, middle-piece, and tail when adenosine triphosphate was used at pH 5·0. The occurrence of an enzyme acting upon hexose diphosphate (fructose-1,6-diphosphate) at pH 9·0 was noted in the head, neck, middle-piece and tail. Gram's stain and the Feulgen reaction were positive throughout the head, indicating the presence of both ribonucleic and desoxyribonucleic acids. Metachromatic staining was not obtained with toluidin blue, indicating the absence of mucopolysaccharides. Fat, including phospholipid, was localized in the middle-piece. The acrosome was characterized by a slight positive reaction with the periodic acid-Schiff reaction which was not due to glycogen, glycolipid or mucopolysaccharide. Furthermore, the protoplasmic droplet which occasionally was present on the tail gave an intense reaction with the periodic acid-Schiff procedure.

Seminal plasma gave the following reactions: Acid phosphatase was positive with sodium glycerophosphate as a substrate at pH 5·0 and alkaline phosphatase was characterized by a weak response with hexose diphosphate (fructose-1,6-diphosphate) at pH 9·0. Gram's stain and toluidin blue gave no reactions. Baker's acid hematein test for phospholipid was negative, but the control preparations were characterized by a bluish-grey stippling and a positive test was obtained with Sudan black B. No reaction was observed with Bodian's protargol method. A slight positive reaction was obtained with the periodic acid-Schiff reaction.

ANDERSON, J. (1952). **The pH change in bull semen and fertility.**—*J. agric. Sci.* **42,** 172-174. [Author's summary copied *verbatim.*] **3880**

An account is given of the relationship between the decrease in pH on incubation of bull semen and fertility. It is shown that, in general, a high pH change tends to be associated with a good conception rate and vice versa. There are, however, exceptions to this general correlation, and it is believed that the pH change test, while giving an indirect measure of sperm metabolism, does not provide the clue to the problem of fertilization.

LINDAHL, P. E., KIHLSTRÖM, J.-E. & STRÖM, B. (1952). **On the relationship between fertility and light-reflecting power in bull spermatozoa.** —*J. agric. Sci.* **42,** 184-187. [Authors' summary modified.] **3881**

The fertility of a number of ejaculates from normal dairy bulls in regular service is found to be positively correlated to the light-reflecting capacity of the spermatozoa in the ejaculates, this being measured by a ratio of nephelometer and electrophotometer readings.

BERTHELON, M. & LARCHIER, H. (1952). Action de la pénicilline sur le sperme de taureau. **[Action of penicillin on bull semen.]**—*Rev. Méd. vét.* **103,** 129-141. **3882**

Added to bull semen immediately before use, penicillin had no detrimental effect; when added before storage, concentrations higher than 12,500 units per ml. impaired vitality.

—G. P. MARSHALL.

POLGE, C. (1951). **Preservation of fowl spermatozoa at low temperatures.**—*Off. Rep.* 9th *World's Poult. Congr., Paris.* **3,** 11-14. **3883**

Fowl semen frozen to −79°C. with solid CO_2 in the presence of glycerol was nearly fully motile on thawing but almost infertile. Slow removal of glycerol by dialysis improved fertility.—K. G. TOWERS.

DAUZIER, L. & WINTENBERGER, S. (1952). Recherches sur la fécondation chez les mammifères: La remontée des spermatozoïdes dans le tractus génital de la brebis. **[The passage of spermatozoa along the genital tract of the ewe.]**—*C.R. Soc. Biol., Paris.* **146,** 67-70. **3884**

Spermatozoa do not reach the lower part of the oviduct in less than four hours, and are not present in the upper part of the oviduct until eight hours after coitus; these times may be reduced towards the end of oestrus.

—G. B. S. HEATH.

CHANG, M. C. (1951). Estado actual de la trasplantación ovular en lose mamíferos. **[Transplantation of ova in mammals.]**—*Arch. vet. Pract.* **1,** No. 2. pp. Tras 1-6. **3885**

C. gave a general account of ovular transplantation and discussed its possibilities. In the rabbit, superovulation is induced with gonadotrophin and after artificial insemination the ova are collected from the donor at a laparotomy and placed by means of a glass pipette into the uterus or fallopian tubes of the receptor. It is essential that the operation be performed when the luteal phase of the receptor corresponds to that of the donor, the development of the transplants being then 21–55%.

—J. A. NICHOLSON.

LIEUX, P. (1952). Aspects du col de l'utérus de la jument, révélés par la photographie. **[Photography of the cervix uteri of the mare.]** —*Rec. Méd. vét.* **128,** 351-358. **3886**

The camera used had a 1:3·5 × f:7·3 lens and a synchronised flash bulb mounted directly above it. A portrait attachment was added and a hood to shield the lens from the immediate flash. The speculum had three metal branches, the inner surfaces blackened to stop reflections and the handle adapted for use with the camera clamped in place. Thirty photographs were taken at fL 22 and 1/200 sec.

The changes observed from these photographs during the different stages of oestrus, pregnancy and approaching parturition were typical and confirmed in every way those that might be deduced from the descriptions in textbooks. The author concluded that pregnancy cannot be diagnosed with certainty by the appearance of the cervix until after the sixth month.—R. G. MARES.

BARMINTSEV, Y. N. (1951). **[Rectal examination of the reproductive organs of the camel.]** —*Konevodstvo.* **21,** No. 1. pp 38-42. **3887**

B. discussed the problem of sterility in bactrian camels in the U.S.S.R.; they usually

calve every two years. Examination of 33 camels revealed that after parturition leucocytosis in the vaginal smears disappeared in 10–12 days and the uterus became normal in 2–3 weeks. Within two months oestrus occurred in 13 camels, lasting between one and 21 days. All 13 were mated anything up to eight times each, but only three became pregnant. The above figures conformed to those noticed by other workers. Before the camels were mated, B. made a rectal examination of the uterus in each case and found developed follicles only in those three that became pregnant. The inference, therefore, was that the first oestrus after parturition occurs mostly without ovulation, a defect which B. suggested might be overcome by adequate nutrition and better management.

Detailed description was given of the method of rectal examination of the uterus to ascertain if a ripe ovum were present: infertile matings could thus be avoided. B. doubted the suggestion of others that coitus can bring about ovulation.—F.A.A.

MARION, G. B. & SMITH, V. R. (1952). **Effect of the administration of unfractionated gonadotrophic pituitary extracts during estrus on time of ovulation in the bovine.**—*J. Dairy Sci.* 35, 71-76. [Authors' summary slightly modified.] **3888**

The effect of the administration of an unfractionated gonadotrophic pituitary extract during oestrus on time of ovulation of dairy heifers was observed. The mean time from the end of oestrus to ovulation for periods when the heifers were treated was 1·01 hour and for the untreated periods 11·74 hours. Length of oestrus was not changed by the treatment as measured under conditions of this experiment.

HANSEL, W. & TRIMBERGER, G. W. (1952). **The effect of progesterone on ovulation time in dairy heifers.**—*J. Dairy Sci.* 35, 65-70. [Authors' summary slightly modified.] **3889**

The subcutaneous injection of small doses (5 to 10 mg.) of progesterone at the beginning of oestrus hastens the ovulatory process in dairy heifers. Both the length of oestrus and the time from end of oestrus to ovulation are significantly reduced. These results and histological changes occurring in the ovary at oestrus suggest that progesterone produced by the ovary before ovulation normally plays a role in release of luteinizing hormone and in ovulation in the cow. These facts may be significant in an understanding of the deranged physiology of the nymphomaniac cow and in other types of infertility in farm animals.

BRONZETTI, P. (1951). Modificazioni istologiche nell'ipofisi di capra gravida. **[Histological modifications in the pituitary gland of the pregnant goat.]**—*Riv. Med. vet. Zootec., Parma.* 3, 219-230. **3890**

B. described the histological structure of the pituitary bodies obtained from six goats at various stages of pregnancy and those obtained from non-pregnant animals. He concluded that it is possible to recognize a pituitary body from a pregnant goat by its regular structure, increased size of the lobules, the cellular hypertrophy accompanying an eosinophilia, the connective tissue hyperplasia and the increased vascularity indicative of an active, functional gland.—J. A. NICHOLSON.

JONES, I. C. (1952). **The disappearance of the X zone of the mouse adrenal cortex during first pregnancy.**—*Proc. R. Soc.* Ser. B. 139, 398-410. [Author's summary copied *verbatim.*] **3891**

The X zone is a wide juxta-medullary layer of cells in the adrenal glands of young mature virgin female mice. Usually the zone begins to degenerate about the 7th day of pregnancy, approximately 48 hours after implantation of the embryo. By the 15th day of pregnancy the X zone has disappeared. The pattern of X zone degeneration found in normal pregnancy can be reproduced in young mature virgin mice by allowing transplants of fertilized eggs from donor mice to grow either in the anterior chamber of the eye or under the kidney capsule. These growths are chiefly composed of trophoblast. In castrated mice and in immature females with such growths the X zone is unaffected. The ovary is therefore an essential factor in the train of events leading to X-zone degeneration. In addition, in the ovaries of females in which transplanted eggs had grown and in which the X zone had degenerated, there were corpora lutea resembling the functional ones in the ovaries of pregnant mice.

Portions of ventral prostate from 21 day old males were grafted into the anterior chamber of the eye. In normally pregnant mice such grafts gave clear evidence of stimulation by the 15th day of pregnancy. The prostate grafts in virgin females injected with testosterone were also stimulated; a dose of 20 μg., which caused disappearance of the X zone, gave a stimulation equivalent to that seen in the graft of 15-day pregnant mice. Some indication of prostate graft stimulation occurred in mature unmated females with growths from fertilized eggs.

It is suggested that the mechanism of X-

zone degeneration during first pregnancy is the production, in the first place, of a substance (luteotropic in nature) by the trophoblast of the developing embryo. This secretion acts upon the corpus luteum which, as a secondary effect of progesterone formation, produces an andromimetic substance. This, in turn, acts directly on the X zone to cause its degeneration together with the formation of a connective-tissue capsule around the medulla.

RASBECH, N. O. (1950). Den normale involutio uteri hos koen. **[The normal involution of the uterus in the cow.]**—*Nord. Vet.-Med.* **2,** 655-687. [English and German summaries. Abst. from English summary.] 3892

An account of study on the normal process of involution in the cow, together with the quantitative amount and composition of the lochial product.

Valuable information can be obtained about the rate of involution by palpation. Normally, the entire uterus becomes definable within 8–10 days *post partum.* The process is concluded in primiparae and secundiparae within 18–20 days *post partum* and in older multiparae within 20–25 days.

The involution of the placenta takes place through three partly co-ordinated processes, comprising disappearance of the caruncular stalk through vasoconstriction, dissolution of the decidua through fatty infiltration, solution and detachment of the entire layer of the caruncular coat, and by formation of the uterine lochia.

The amount of uterine lochia is largest in the first two days, about 1400–1600 ml.; by the 8th day the amount is about 500 ml. and after the 14th day the daily amount is only a few ml. Hyperleucocytosis occurs during the first two or three days after parturition. The total amount of lochial discharge in primiparae is about 500 ml., but is subject to considerable individual variation. A few primiparae discharge almost no lochia but absorb practically the entire uterine contents. Older multiparae discharge from 800 to 2000 ml. lochia.

A description was given of the method employed for aseptic sampling of the uterine contents in the puerperium. Puerperal infections occurred in 25–30% of the clinically normal cows of the herds examined. *Corynebacterium pyogenes* was the most frequent pathogen. *Bact. coli* was present in 26%. Staphylococci occurred in 17%. Mixed infections were present in 25% of the material examined. Group B streptococci were demonstrated in two cases.

BULMER, D. (1952). **Observations on the development of the lower end of the vagina in the sheep.**—*J. Anat., Lond.* **86,** 233-245. [Author's summary copied *verbatim.*] 3893

The structure of the region of the lower end of the vagina and the urogenital sinus in a series of sheep foetuses is described.

During development, a superior projection arises from the dorsal division of the urogenital sinus. This superior projection is in contact above with the lower end of the Mullerian vagina, and forms the lower vaginal segment.

In a still-born lamb of 375 mm., there is no macroscopic communication between the lumina of the Mullerian vagina and the superior projection. The significance of this uncanalized tissue is discussed.

Stratification of the epithelium of the Mullerian vagina extends upwards from the lower end and was first seen at the 152 mm. stage. There is no indication that this stratified epithelium is derived from the urogenital sinus.

From the 115 mm. stage onwards the lower ends of the Wolffian ducts are associated with solid cellular cords, of similar tissue to that of the superior projection of the sinus. It is not possible to decide if these Wolffian cords are derived from the Wolffian epithelium or from the urogenital sinus.

The presence of the suburethral diverticulum and of a structure probably representing a rudiment of Bartholin's gland are noted.

BOSTRÖM, H. & ODEBLAD, E. (1952). **Autoradiographic observations on the uptake of S^{35} in the genital organs of the female rat and rabbit after injection of labeled sodium sulfate.** —*Acta endocr., Copenhagen.* **10,** 89-96. [In English. Authors' summary copied *verbatim.*] 3894

Five mature rats and one mature rabbit were injected with S^{35} as Na_2So_4 and autoradiographs were prepared from the ovary, tube, uterus and vagina after 48 hours. The preliminary observations revealed mainly the following facts: In the ovaries the follicular granulosa and, especially, the follicular fluid contained large amounts of S^{35}. In the tube the presence of S^{35} was related to the presence of mucus. In the corpus uteri, the endometrial stroma contained considerable amounts of S^{35} after oestrogenic stimulation and in the vagina a similar reaction was found in the submucosa after oestrogenic treatment. Part of the S^{35} was probably situated in ester bound sulphate.

MUSSILL, J. (1951). Hormonbehandlung bei der Nachgeburtsverhaltung. **[Hormone treat-**

ment of retention of the placenta.]—*Wien. tierärztl. Mschr.* **38,** 785-790. [English, French and Italian summaries.] 3895

Intravenous injection of 50–100 mg. aqueous hexoestrol induces contraction of the atonic uterus (except when it is ruptured) in the cow, and may be used to treat retention of the placenta.—N. DEAN.

MILLER, W. R. & TURNER, C. W. (1951). **The extraction and hydrolysis of the androgens of cow manure.**—*J. Dairy Sci.* 34, 347-352. 3896

Dried cow dung was extracted with various solvents such as ethyl ether, benzene, etc. in which androgens are known to be soluble and the extracts tested for androgenic properties. Their potency was, however, found to be low, suggesting that the androgens are present in a bound form. This was confirmed since after acid hydrolysis, ethyl ether extracts revealed considerable androgenic activity. Two methods of androgen extraction were described.

—J. A. NICHOLSON.

BORNMANN, S. & LOESER, A. (1950). 1:3-Butandiol als Lösungsmittel und Vehikel für oestrogene Substanzen. [**1,3-butanediol as a solvent and vehicle for oestrogenic substances.**]—*Arch. int. Pharmacodyn.* **82,** 306-308. [In German.] 3897

When used as a solvent for oestradiol monobenzoate, oestrone or stilboestrol dipropionate (1 mg. in 10 ml.), an 85% aqueous solution of 1,3-butanediol proved slightly superior to glycerin in facilitating penetration of these oestrogens through the skin of rats.

—G. P. MARSHALL.

UNDERWOOD, E. J. & SHIER, F. L. (1952). **The incidence of oestrus in ewes grazing on subterranean-clover pastures.**—*Aust. vet. J.* **28,** 157-158. 3898

Two groups of 20 Merino ewes, aged 40 months at the beginning of the experiment, were grazed together on subterranean clover pastures for 13 months, and during this period the incidence of oestrus was assessed by the use of raddled, vasectomized rams. One group consisted of normal ewes, raised on non-clover pastures, the other ewes from a flock known to have a very low fertility as a result of grazing subterranean clover since birth.

The breeding seasons of the two groups were similar to one another and to that of normal ewes on non-clover pastures. The clover has been shown to be oestrogenically potent for only a period of 4–5 months each year, and this coincided with the non-breeding season of the ewes. The oestrous periods during the breeding season were somewhat more irregular in the ewes of the "infertile" group than in those of the "normal" group.

All the ewes were mated immediately after the termination of the experiment. Two out of 20 in the "normal" group and 15 out of 18 in the "infertile" group did not lamb. It was concluded that the infertility in ewes reared on subterranean clover pastures was not caused by a disturbance of the oestrous cycle.

—A. W. H. BRADEN.

OETTLÉ, A. G. & HARRISON, R. G. (1952). **The histological changes produced in the rat testis by temporary and permanent occlusion of the testicular artery.**—*J. Path. Bact.* **64,** 273-297. [Authors' summary modified.] 3899

The pathogenesis of testicular lesions resulting from ischaemia was investigated following temporary and permanent occlusion of the testicular artery in rats. Observations on the relative susceptibility of different types of cells to ischaemia revealed that the Sertoli cells are most resistant, and then the resting spermatogonia; spermatogenic cells which are differentiating rapidly are more susceptible than those in the resting stages. The effect of varying degrees of ischaemia on spermatogenic cell types and five distinguishable grades of resulting damage to the seminiferous tubule were detailed. Spermatogenic destruction is produced by ischaemia of more than about one hour's duration; in this grade of damage there is survival of only Sertoli cells, which act as macrophages, no regeneration of spermatogenic cells occurring. These results confirm the current view that the prognosis in torsion of the testis is poor and suggest that reduction of the torsion and re-establishment of the circulation should be achieved within an hour if spermatogenesis is to be maintained. Differences in degree of degeneration which occur in different parts of the rat testis result from peculiarities of vascularisation within the testis. Changes in the connective tissue of the testis following ischaemia were also described. The importance of these observations in relation to problems of infertility and in relation to methods of investigating the properties of Sertoli and Leydig cells in isolation was discussed.

ROGERS, P. V. (1952). **Partial sterilization caused by feeding sulfaguanidine to rats.**—*Amer. J. Physiol.* **169,** 111-117. [Author's summary copied *verbatim*.] 3900

Sulfaguanidine fed to pregnant and lactating rats for four consecutive generations resulted in a 95 per cent decrease in the number of offspring born. Food intake and activity also

became subnormal. Both sexes were affected although the males suffered more than the females. Injections of testosterone and thyroxine failed to bring these males back to normal. Fertility in the colony returned to normal in the first generation after the sulfaguanidine treatment had been discontinued.

Larger amounts of this drug given for a relatively short time had a similar effect upon fertility. Twenty-three pairs of animals produced an average of 3·2 rats per litter compared to 9·9 for the control animals receiving no sulfaguanidine.

A comparison of the number of implantation sites on the seventh day of pregnancy with the offspring actually born showed only a normal loss through absorption or abortion.

There was a tremendous hyperplasia of the thyroid gland in all animals receiving the larger amounts of sulfaguanidine. Desiccated thyroid in addition to the sulfaguanidine prevented this enlargement but failed to increase the number of offspring produced. Brewer's yeast had no effect in increasing the fertility.

It may be concluded that the administration of sulfaguanidine to pregnant and lactating rats will after four generations cause an almost complete sterilization of the colony. Feeding comparatively large amounts of sulfaguanidine to normal rats for 30 days prior to mating will also cause a marked decrease in the number of offspring.

Spörri, H. & Scheitlin, M. (1952). Klinisch-physiologische und pathologisch-anatomische Untersuchungen an zwei Fällen von persistierendem Ductus arteriosus (Botalli). **[Two cases of ductus arteriosus persistens (in dogs).]** —*Schweiz. Arch. Tierheilk.* **94,** 387-402. [English, French and Italian summaries.] **3901**

A detailed study. Electrocardiographs of the condition are included.—Roy Mack.

Millar, R. & Tucker, R. (1952). **Nervous symptoms developed in the chondrodystrophic dog.**—*Brit. Vet. J.* **108,** 293-298. [Abst. from authors' summary.] **3902**

The authors gave details of pathological reflexes and clinical picture in a chondrodystrophic dog. They described the presence of a myoclonogenic field in the cervico-thoracic area as well as the migratory effects and reflex changes under local and general anaesthesia and discussed briefly connexions of chondrodystrophia foetalis with the bone and nervous disorders associated with nutritional deficiency. A description of osteopapyriasis of scapulae and osteoporosis in ulna and radius was given. Chondrodystrophia foetalis gives a picture of malformation and chondrodystrophic diathesis. This congenital disease may be connected with abnormal enzyme production, resultant abnormal morphotic relations involving both bone and nervous systems.

Study of congenital diseases through the embryonic and adolescent periods of life, in clinical and developmental features, is necessary. The opportunity for such a study may arise in the Pekinese breed, in which this congenital disease may be hereditary.

Asplin, F. D., Boyland, E., Sargent, S. & Wolf, G. (1952). **Hypertrophy of the testis induced by sulphadimidine and other pyrimidine derivatives.**—*Proc. R. Soc.* Ser. B. **139,** 358-372. [Authors' summary copied *verbatim.*] **3903**

The administration of sulphonamido derivatives of pyrimidine (*e.g.* sulphadimidine) to young cockerels induces testicular hypertrophy. Of thirty-five compounds tested for the effect, only phenylsulphonamide derivatives of pyrimidine and quinoxaline have been found to be active.

The effect of testicular hypertrophy appears to be independent of bacteriostatic action as it is produced by 2-phenylsulphonylamido-4:6-dimethylpyrimidine, and the effect of sulphadimidine is not neutralized by administration of *p*-aminobenzoic acid or of folic acid. Sulphadimidine reversed the inhibitory effect of stilboestrol on the testes of young rats. Testicular hypertrophy could not be induced regularly in normal young rats or mice by sulphadimidine.

The synthesis of some new pyrimidine derivatives is described.

I. Warnick, A. C., Wiggins, E. L., Casida, L. E., Grummer, R. H. & Chapman, A. B. (1951). **Variation in puberty phenomena in inbred gilts.**—*J. Anim. Sci.* **10,** 479-493. **3904**

II. Wiggins, E. L., Warnick, A. C., Grummer, R. H., Casida, L. E. & Chapman, A. B. (1951). **Variation in puberty phenomena in inbred boars.**—*Ibid.* 494-504. **3905**

I. Analysis of data obtained from 205 inbred gilts showed significant differences in age and weight at puberty between gilts of six lines. In all lines fertility increased when mating was delayed after the first oestrus.

II. In 136 inbred boars studied over a period of two years there was a correlation between weight and age at puberty during one of the years. In 53 of the boars fertility increased with age.—E. J. H. Ford.

SMITH, E. P. & KEYES, E. A. (1951). **Milking cows dry before parturition.**—*Bull. Mont. agric. Exp. Sta.* No. 475. pp. 19. 3906

The milking of Holstein cattle for seven days before parturition caused an increase in milk yield and relieved udder congestion; similar treatment of Jersey cattle caused no similar effects. There were no significant differences in growth rates between calves from cows of either breed which were milked *pre-partum* and calves from cows which were not so treated. —E. J. H. FORD.

See also absts. **3586** (inheritance of susceptibility to mastitis); **3693-3694** (choriomeningitis virus in pregnant rabbits).

ZOOTECHNY

ROBERTS, S. J. (1952). **A practical calf dehorner.**—*J. Amer. vet. med. Ass.* **120,** 193-195. 3907

R. finds that caustic applications to the horn buds of calves have proved unsatisfactory through failure to apply the materials properly or at the correct time. The hot iron method is also not satisfactory. He has tried an instrument, resembling a laboratory cork borer, consisting of a 1 in. diameter sharpened tube which is used to cut around the horn bud down to the bone, the bud then being levered out. Calves up to three months of age can be dealt with quickly and haemorrhage is not usually difficult to control.—K. G. TOWERS.

COLEMAN, J. M. & GODLEE, A. C. (1952). **Early lamb production on irrigated pastures.**—*Agric. Gaz. N.S.W.* **63,** 228. [Authors' summary copied *verbatim.*] 3908

The second year's work has been completed in the five-years trial at Yanco Experiment Farm to ascertain the breeds most suitable to very early lamb production where irrigated pastures are available throughout the year. Good results obtained from Suffolk rams, and Dorset Horn × Merino ewes were outstanding features of the 1950-51 trial.

BONSMA, J. C. (1951). **Ecological animal husbandry research and its application in maintaining a permanent pastoral industry.**—*Proc. Spec. Conf. Agric., Aust.* 1949. 364-381. London: H.M. Stat. Off. 20s. 3909

B. discussed ecological factors which influence efficient livestock production. The type of farming which can be undertaken in a particular zone is determined by the climatic pattern and soil fertility. Efficient and economic animal production in any zone depends upon selection and breeding of animals which are adaptable to the environmental conditions in which they have to live.—J. D. STEEL.

DUCKHAM, A. N. (1952). **American agriculture; its background and its lessons.** pp. 78. London: H.M. Stat. Off. 2s. 6d. [Items of veterinary interest pp. 43-44.] 3910

Farmers in the U.S.A. are more inclined, than those in the U.K., to get rid of a sick animal than to treat it. Veterinary services are expensive. Cattle TB. eradication has been successful, but a scheme for the elimination of *Brucella abortus* infection has met difficulties in diagnosis. The trade in vaccines and sera, antibiotics, and drugs is large; sometimes these have been marketed before methods of application were foolproof. Inoculation is widely practised by farmers; sulphonamides are commonly included in poultry mash to prevent coccidiosis.—S. E. FOX.

DAVIES, A. W. (1951). **Green yolks.**—*Off. Rep. 9th World's Poult. Congr., Paris.* **4,** 20-26. 3911

The downgrading of eggs with green yolks in spring from some farms has caused serious financial loss and the theory that green yolks result from ingestion of certain pasture weeds is not a wholly satisfactory explanation. A survey of 121 outbreaks showed that 70 occurred in May, most often on general farms with a low rainfall where birds were kept extensively on permanent pasture containing clover. Experimentally, green yolked eggs have been produced by feeding grain with clover and also by daily dosage with a chlorophyll preparation. The abnormal colour has been found to intensify on storage, probably by transference of pigment from albumen to yolk. The pigment, although probably a chlorophyll derivative, has not yet been identified.—K. G. TOWERS.

WILSON, W. O. & EDWARDS, W. H. (1952). **Response of hens under thermal stress to dehydration and chilled drinking water.**—*Amer. J. Physiol.* **169,** 102-107. [Authors' summary copied *verbatim.*] 3912

Under the conditions of these experiments, when the room temperature was held at 90°F., the following observations were made on laying hens: Withholding water drastically limited feed consumption. The hen conserved her supply of body water by reducing her respiration rate and voiding drier droppings. When water was withheld for 25 hours, only a short interruption of

egg production was observed; when water was withheld for 48 hours egg production ceased and some of the pullets moulted, but later came back into production; the same was true for the 72-hour period. Cooling the drinking water lowered body temperature; otherwise, the birds responded practically the same as did the controls given warm water to drink.

CARPENTER, K. J. & DUCKWORTH, J. (1952). **Egg production of pullets fed on a ration containing aureomycin.** [Correspondence.] — *Nature, Lond.* **169**, 669. 3913

The growth stimulating effect of aureomycin in young poultry was confirmed; under the experimental conditions no significant effect on egg production was produced by aureomycin. —JOHN SEAMER.

ELAM, J. F., GEE, L. L. & COUCH, J. R. (1951). **Effect of feeding penicillin on the life cycle of the chick.**—*Proc. Soc. exp. Biol., N.Y.* **77**, 209-213. [Authors' summary modified.] 3914

Chickens hatched from eggs laid by hens on a vitamin B_{12} deficient diet were divided into four groups, each of 25 chickens, one fed a basal diet with no supplements and the other three the basal diet with supplements of 1 μg. vitamin B_{12} intramuscularly per week, 33 mg. procaine penicillin per kg. of diet and 1 μg. vitamin B_{12} per week + 33 mg. procaine penicillin.

The feeding of penicillin stimulated the growth of chickens fed an all-vegetable-protein diet. Injection of the antibiotic into the chickens fed the basal diet stopped the mortality which was high in that group and appeared to stimulate growth. Eggs were obtained from all groups. Pullets fed penicillin and injected with vitamin B_{12} had the highest egg production. Hatchability of eggs from birds injected with vitamin B_{12} was within the normal range. No live chicks were obtained from pullets injected with penicillin from the 14th week. A 39% hatch was obtained from the eggs of pullets fed penicillin continuously. The vitamin B_{12} content of the liver and kidney tissues and of the egg yolks was directly related to the injection of the vitamin into the birds. Feeding of penicillin caused a significant increase in the total number of intestinal micro-organisms as indicated by thioglycollate counts. Penicillin likewise caused a significant increase in the number of enterococci of the intestine during the first 14 weeks of the experiment. The administration of penicillin either orally or intravenously resulted in a marked increase in the number of penicillin resistant micro-organisms in the intestinal tract.

POIJÄRVI, I. (1951). Versuche über die Bedeutung von Methyl-Thiouracil bei der Mastfütterung von alten Milchkühen. **[Methylthiouracil supplements for fattening of old dairy cows.]**—*Maataloust. Aikakausk.* **23**, 90-110. [In German. Finnish summary.] 3915

There was no significant difference in the weight of the dry material and fat content of the flesh and liver of two groups of old Ayrshire cows fed on the same basic diet but with the addition of methyl thiouracil for one group. —CHARLOTTE M. WOOD.

KALUSCH, A. (1952). Stand der Tierkörperbeseitigung und Tierkörperverwertung in Österreich. **[Disposal and utilization of carcasses in Austria.]**—*Wien. tierärztl. Mschr.* **39**, 288-299. [English, French and Italian summaries.] 3916

Eight modern plants have been built for the utilization of carcasses and condemned meat, to give meat meal, fat, cured skins, etc. K. discussed regulations for the disposal of carcasses at places where transport to the plants is uneconomic.—S. E. FOX.

See also absts. **3876** (pasture management and dairy production in New Zealand); **3945** (hen batteries); **3946** (book, herdsmanship).

TECHNIQUE AND APPARATUS

CRUVEILHIER, L., THIEULIN, G. & LACAILLE, S. (1949). Recherche du streptocoque de la mammite contagieuse des vaches laitières par la méthode du moussage. **[Diagnosis of streptococcal mastitis by the foaming method.]** — *Ann. Inst. Pasteur.* **76**, 564-566. 3917

The foaming method used for the isolation of *Mycobact. tuberculosis* was used with success for mastitis streptococci. The authors gave details of isolations so made from 42 samples of milk.—G. P. MARSHALL.

BARTHOLOMEW, J. W. & MITTWER, T. (1952). **The Gram stain.**—*Bact. Rev.* **16**, 1-29. 3918

An exhaustive discussion based on experiments performed by the authors and a detailed analysis of the literature. 150 references are cited.—L. M. MARKSON.

TIETZ, C. J. & HOHORST, H. J. (1950). Bakterioskopischer Tuberkelbazillennachweis auf Membran- und Cellafiltern. **[Microscopic demonstration of *Mycobacterium tuberculosis* on membrane and "cella" filters.]**—*Zbl.*

Bakt. I. (Orig.) **155**, 130-135. [English, French and Russian summaries.] 3919

A micro-filter apparatus is described, which with the aid of interchangeable parts allows the filtration on to very small surfaces 1/1, 1/2, 1/4, 1/8 sq. cm., thereby reducing the number of visual fields to 4,000, 2,000, 1,000, and 500. Optimal enrichment of liquid material to be examined becomes possible by this method. For membrane filter staining, basic stains are better than acid ones. For tubercle bacilli aqueous aniline-fuchsine with or without counterstaining is suitable. The dried, stained filtrate is cleared with xylol and embedded in Canada balsam.—W. R. Bett.

Scholer, H. J. (1952). Ersatz des Rinderalbumins (Fraktion V) durch Vollserum in Dubos' schen Nährböden. **[Substitution of bovine albumin by whole serum in Dubos' medium.]**—*Schweiz. Z. allg. Path.* **15**, 1-14. [English and French summaries. English summary modified.] 3920

The growth of strains H37Rv and BovH5 of the tubercle bacillus is somewhat more accelerated by albumin fraction V than by a sample of ox serum. The reverse result was obtained with three freshly isolated strains of tubercle bacilli. A sample of horse serum inhibited the growth of all strains examined. S. recommends the use of whole ox serum in Dubos' solid medium, instead of the albumin-oleic acid complex. This substitution is not feasible in fluid Tween media.

Maslen, L. G. C. (1952). **Routine use of liquid urea medium for identifying *Salmonella* and *Shigella* organisms.**—*Brit. med. J.* Sept. 6th, 545-546. [Author's summary copied *verbatim.*] 3921

The use of a liquid modification of Christensen's urea medium is described. It has proved satisfactory in the routine examination of faeces and rectal swabs for organisms of the *Salmonella* and *Shigella* groups. The advantages claimed for the medium are its simplicity and economy of time and media.

Renoux, G. (1952). Une nouvelle méthode de différenciation des variétés de *Brucella*. Action du diéthyldithiocarbamate de soude (DEDTC). **[Differentiation of *Brucella* using diethyldithiocarbamic acid.]** — *Ann. Inst. Pasteur.* **82**, 536-562. 3922

R. described the characteristic zones which appeared around a filter paper disc soaked in diethyldithiocarbamic acid placed on an "Albini agar" plate seeded with a brucella culture. These changes readily enabled determination of 42 strains examined after three days' incubation at 37°C.—A. J. Stevens.

Loehning, R. W. & Van Baaren, H. J. (1952). **A simple method for staining trypanosomes and plasmodia of malaria in tissue sections.** —*Science.* **115**, 469-470. 3923

The tissue is dehydrated in ethanol and butyl alcohol and embedded. Kingsley I & II stain is then applied, followed by acetone, acetone with eosin, and the section dehydrated and cleared. The nuclei stain blue and the cytoplasm a lighter blue. Undulating membranes and blepharoplasts are not easily seen.

—Jas. G. O'Sullivan.

Bush, V. (1952). **Automatic microtome.**—*Science.* **115**, 649-652. 3924

The basis of this instrument is a Spencer microtome, to which has been added mechanism for handling 35 mm. film and a device for pressing this film on to the block and guiding and supporting it during slicing. The microtome is motor driven at ten sections a minute. Controls are by cams, so that all operations are automatic. In action, a segment of the continuous film is pressed against the tissue block which, thus supported, is sliced; the section adheres to the film; the knife is withdrawn for the next stroke; the film is moved on another segment and clamped in position.

Apart from the convenience of an automatic process, registration of serial sections is precise, while, according to B., tissue distortion is less than by the usual method. Staining can be done in a photographic tank.

—L. M. Markson.

Polson, A. (1951). **An electrophoresis apparatus for analysing several sera simultaneously.** [Correspondence.] — *Nature, Lond.* **168**, 996. 3925

P. described a method whereby two [not "several" as in title] electrophoretic analyses can be made simultaneously using the Tiselius apparatus with a standard central section.

—G. Davies.

Loosmore, R. M. & Allcroft, R. (1951). **Technique and use of liver biopsy in cattle.**—*Vet. Rec.* **63**, 414-416. 3926

For the purpose of obtaining samples for estimation of the copper content a technique based on that of Dick [*V.B.* **16**, 1905] was developed. Under paravertebral anaesthesia and using a special stilette and syringe, portions of liver measuring about $1\frac{1}{2}$ in. × $\frac{1}{4}$ in. may be

obtained with safety. The technique and instruments are described as are some of the results of copper estimation in the samples.

—M.C.

UDALL, R. H., WARNER, R. G. & SMITH, S. E. (1952). **A liver biopsy technique for cattle.**—*Cornell Vet.* **42,** 25-27. 3927

The method used is a modification of that originally described by Dick [*V.B.* **16,** 1905]. A 23 cm. long, 0·5 cm. inside diameter stainless steel needle with stilette is used. Under local anaesthesia the needle is inserted into the right 10th or 11th intercostal space about a quarter of the way down the rib, in a direction perpendicular to the body surface. When the needle tip is at the liver surface the stilette is removed and the liver lobe completely pierced. Needle and core are then withdrawn.

—E. J. H. FORD.

DORNHORST, A. C. & LEATHART, G. L. (1952). **A method of assessing the mechanical properties of lungs and air-passages.** [Human].—*Lancet.* **263,** 109-111. [Authors' summary copied *verbatim.*] 3928

The pressure in the oesophagus is readily measured, and is a satisfactory index of the general intrathoracic pressure. By simultaneous measurement of oesophageal pressure and trunk expansion it is possible to estimate and analyse the force needed to expand the lungs. Some applications are described and illustrated.

FLEMING, A. & OGILVIE, A. C. (1951). **Syringe needles and mass inoculation technique.**—*Brit. med. J.* March 17th, 543-546. 3929

When multiple injections are given from one Record syringe filling, body fluid enters the needle in approximately 14% of instances, and may be transferred to the syringe during the process of changing the needle. Syringes may also become contaminated by direct reflux of fluid from the body of the patient. The authors found that when pressure was maintained on the piston while the needle was withdrawn, no reflux of fluid occurred when only one dose was taken up into the syringe even when injections were made against pressures far greater than would be encountered in practice. The authors suggested that using this technique, combined with sterilization of the needle between inoculations, while it is still attached to the syringe, by immersing it for 10 sec. in liquid paraffin at a temperature over 130°C. rapid progress can be made in mass inoculations. Experimental data were given on the relative time/temperature combinations required for sterilization in oil, while still attached to the syringe, of needles contaminated to varying degrees by different micro-organisms. The tests were done against *Staph. aureus, B. friedländeri, Bact. coli* and an enterococcus which survived after heating to 60°C. for 15 min. Immersion of the needle in boiling water for 10 sec. was also effective [heat-resistant enterococcus not used in test], but needles did not rust and remained sharp for a longer period when oil was used.

—CLIVE BRIGGS.

See also absts. **3865** (enrichment media for *Salmonella* organisms); **3875** (apparatus for technical colleges); **3883** (preservation of fowl spermatozoa); **3885** (transplantation of ova in mammals); **3886** (photography of the cervix uteri in a mare); **3887** (rectal examination of the genital organs in camels).

MISCELLANEOUS

STEWART, J. D. (1951). **The detection of "doping" in race-horses.**—*Aust. vet. J.* **27,** 153-156. 3930

S. defined the term "doping", discussed its potential effects on racing and outlined the history of the organization which the Australian Jockey Club has created to control the practice. Most of the paper is devoted to a discussion of the apparatus required for the collection and despatch of samples of saliva and urine, the precautions to be observed and the technique of collecting the samples. The identification in saliva and urine of drugs commonly used for doping and the reliability of the tests used, were not discussed in any detail.—J. D. STEEL.

REPORTS

UNION OF SOUTH AFRICA. (1950). **Report of Director of Veterinary Services 1950.** [ALEXANDER, R. A.]—*Fmg. S. Afr.* **25,** 415-428. 3931

The game reserves where tsetse fly once abounded have been cleared by spraying with D.D.T. from aircraft. In only one, the Hluhlwe Game Reserve were *Glossina pallidipes* and *G. brevis,* the two most dangerous species, still present. This reserve is surrounded by a barrier cleared of bush two miles wide, which is continually patrolled, and vehicles crossing

it pass through "de-flying" stations. *G. austeni* still breeds over a wide area, but it is not considered dangerous. In the cleared areas, in which breeding of dangerous species might start again, cattle are dipped in 0·1%D.D.T. + 0·16% sodium arsenite. As a result of these precautions, no cases of TRYPANOSOMIASIS were recorded during the year.

RABIES control is complicated by the fact that it is carried by such wild carnivora as the meerkat (*Suricata*) and the mongoose. Fortunately, these seem to transmit a milder strain than the less frequently infected jackal and larger carnivora. In two instances TB. in cattle was attributed to bovine type organisms voided by human beings. On one farm pigs were infected with human type tubercle bacilli.

Stephanurus dentatus, the kidney worm of pigs, was found for the first time in South Africa.

A general account was given of the various disease problems dealt with, and also of the immunological products issued by the laboratory.

Pamaquin has a selective action on *Theileria parva* in the blood, as a result of which they are incapable of developing in *Rhipicephalus appendiculatus*. There were 11 fresh outbreaks of EAST COAST FEVER in Natal.

The study of "LUMPY SKIN DISEASE" was continued and a passage strain was maintained. Details were given of the incidence of the disease.

The work of the various departments in entomology, helminthology, biochemistry, nutrition, physiology and pharmacology, toxicology, surgery, gynaecology and radiology, pathology, medicine and therapeutics, meat research, zootechny and wool research was described.—R. MACGREGOR.

TANGANYIKA TERRITORY. (1951). **Annual Report of the Department of Veterinary Science and Animal Husbandry, 1950.** [REID, N. R.] pp. 27. Dar es Salaam: The Govt. Printer. 2s. 3932

BOVINE CONTAGIOUS PLEURO-PNEUMONIA continued to smoulder in the northern areas and cases of EAST COAST FEVER tended to be more numerous following the rainfall in the first half of the year. ANAPLASMOSIS is assuming more importance and the installation of dipping tanks is being pushed forward. TRYPANOSOMIASIS continued to cause much trouble but the use of dimidium bromide (phenanthridinium 1553) had proved an invaluable boon.

RINDERPEST remains one of the greatest problems. The eradication policy of the last 30 years—despite much to its credit—has not stamped out the disease which is still as great a menace as when Tanganyika was taken over from the Germans in the 1914-18 war. Instead of mass inoculations in affected areas, a new policy is being initiated whereby in all important game and cattle-contact areas annual or biennial inoculation of all susceptible animals is to be undertaken to help to keep herd immunity at its highest pitch.

Other diseases mentioned include ANTHRAX, BLACKLEG, RABIES, F. & M. DISEASE, CONTAGIOUS ABORTION and TB. There is a high incidence of TB., and in the Iranga district there are 20,000 reactors to mammalian type tuberculin, or 14% of young and adult stock. Examination on slaughter reveals that the lymph nodes of the head and pulmonary system are infected in 93% of cases. There is a serious incidence amongst African-owned pigs, but there is no evidence that this has caused infection of the human population.—D. S. RABAGLIATI.

TRINIDAD AND TOBAGO. (1952). **Administration report of the Director of Agriculture for the year 1950. Report of the Deputy Director (Animal Husbandry).** [METIVIER, H. V. M.]—*Trinidad and Tobago Admin. Rep. Dept. Agric.* pp. 21-29. 3933

An attempt is being made to eradicate TB. in cattle. One case of JOHNE'S DISEASE has been found. F. & M. DISEASE is present. SWINE FEVER has been brought under control by the use of crystal violet vaccine.

—G. B. S. HEATH.

UNITED NATIONS. (1952). Council of FAO 15th Session, 7-14 June 1952. **Report of the activities of FAO under the Expanded Technical Assistance Program for the first financial period, 1950-1951 and outline of activities for 1952.** pp. 76. Rome: Food & Agric. Org. of the U.N. 3934

In Ethiopia, large-scale vaccination against RINDERPEST is being undertaken and a campaign of cattle inoculation against BOVINE CONTAGIOUS PLEURO-PNEUMONIA and the eradication of ANTHRAX and BLACKLEG are planned. In Afghanistan, eradication of RINDERPEST is in hand; vaccines against NEWCASTLE DISEASE are prepared locally. In Burma, vaccines produced locally include those against RINDERPEST, HAEMORRHAGIC SEPTICAEMIA and ANTHRAX. In India, a campaign against RINDERPEST costing 42 million rupees is planned. Pakistan plans to spend 6½ million rupees on an anti-RINDERPEST campaign; LIVER FLUKE INFESTATION and

F. & M. DISEASE are being investigated; vaccine for NEWCASTLE DISEASE is being introduced.

—S. E. FOX.

ANON. (1952). Le laboratoire central de l'élevage de Dakar.- Son fonctionnement en 1951. **[Report of the Veterinary Laboratory at Dakar for 1951.]**—*Bull. Serv. Élev. Industr. anim., A.O.F.* **5**, pp. 57-76. 3935

Shortage of staff was acute during 1951. Details are given of the production of vaccines and sera and of diagnostic work. There were 465 cases of BOVINE CONTAGIOUS PLEURO-PNEUMONIA, 45 cases of NEWCASTLE DISEASE and eight of RABIES. TRYPANOSOMIASIS is firmly established.

Details are also given of animals treated in the clinics.

Research was mainly on TRYPANOSOMIASIS. A distribution map of pathogenic trypanosomes is under completion.—J.D.

U.S.A. (1951). State of California. **Thirty-second annual report of the Department of Agriculture, period ending Dec. 31, 1951.**—*Bull. Dep. Agric., Calif.* **40**, pp. 424. [Items of veterinary interest pp. 281-312.] 3936

TB. eradication is carried out by co-operative tuberculin testing by federal and state veterinarians and there were 1,535 reactors in 789,789 cattle tested in 22,549 herds. Calf vaccination for the control of BRUCELLOSIS progressed very favourably in 1951, a total of 314,200 calves being vaccinated. Eradication of BRUCELLOSIS in swine is a voluntary measure, the blood agglutination test being used. JOHNE'S DISEASE occurred in three herds. The cervical test by the injection of a double dose of johnin in the side of the neck is considered to be the best test.

SHEEP SCAB was reported in a consignment of 281 sheep from Texas, the first outbreak for 20 years.

INFECTIOUS ATROPHIC RHINITIS in pigs was noticed for the first time. The disease is causing considerable anxiety in the central part of the U.S.A.

Other diseases mentioned are ANTHRAX, *Listeria* INFECTION in sheep, EQUINE ENCEPHALOMYELITIS, CHORIOPTIC MANGE in cattle and HEMLOCK POISONING in pigs.

Reports are included on the work of the several pathological laboratories; that on poultry diseases is given great prominence.

Of 866,312 animals slaughtered under state inspection, 1,973,102 lb. of fresh meat and offals were condemned as unfit for food. The abattoir statistics are given in tabular form.

—D. S. RABAGLIATI.

BOOK REVIEWS

CLIFTON, C. E., RAFFEL, S. & BARKER, H. A. [Edited by.] (1951). **Annual review of microbiology. Vol. 5.** pp. ix + 379. California, U.S.A.: Annual Reviews, Inc. $6.00. 3937

Five of the reviews deal specifically with viruses. The reviews that are of particular interest from the veterinary point of view are those on "Virus-induced tumors of animals", "Interference between animal viruses" and "Poliomyelitis and poliomyelitis-like viruses of man and animals". The last of these includes sections on the Coxsackie group of viruses, the encephalomyocarditis virus and the Teschen disease virus. The reviews on Metabolism and on Nutrition of micro-organisms have been brought up to date from the previous volume. A particularly enlightening review is that on enzymatic adaptation of bacteria, as it defines clearly the role of genetic control of adaptive enzyme formation.—A. MAYR-HARTING.

MOORE, R. A. [Edward Mallinckrodt Professor of Pathology, Washington University School of Medicine, St. Louis.] (1951). **A textbook of pathology. Pathologic anatomy in relation to the causes, pathogenesis, and clinical manifestations of disease.** pp. xiii + 1048. Philadelphia & London: W. B. Saunders Company. 2nd Edit. 63s. 3938

In this textbook of human pathology, considerable attention is paid to the correlation of symptoms with lesions; experimental aspects are well covered, and there are helpful and often lengthy lists of references to the literature. The enthusiasm of the author is apparent, and the reader will be left with the impression that pathology is not only a useful but also a developing and even exciting subject. The broad division of the subject into general and special pathology is adhered to, but the arrangement and treatment in these divisions is somewhat unconventional. First, instead of the usual consideration of the degenerations, infiltrations, and so on, they are incorporated into discussions of disturbances in the metabolism of protein, carbohydrates, lipids, minerals and of the fluids of the body. Before the chapters on inflammation, repair and neoplasia, disturbances in the fluidity of the blood and in the growth and differentiation of cells are dealt with. As regards special pathology, the first section concerns diseases caused by living agents, taken as

far as possible in groups according to the portal of entry of the organisms concerned. Then follow sections on diseases caused by physical and chemical agents, and by deficiencies. There is a brief section on the diseases of pregnancy and of the extremes of life. The remainder of the book deals with the rest of systematic pathology.

Some very minor criticisms may be made, arising partly out of what is perhaps an undue condensation or abbreviation. For example, the bold statement (p. 138) that "the average age of patients with carcinoma is 53·8 years and with sarcoma 32·8 years" needs considerable qualification. The statement (p. 136) that the so-called venereal sarcoma of the dog has been established as viral in origin is directly contrary to the findings of the authors quoted in its support, and the statement (p. 368) that the virus of this tumour is handed down from one animal to another by coitus thus awaits proof. Sarcoma of the liver of the rat (p. 619) can only loosely be said to be intimately associated with infestation with the tapeworm *Taenia taeniaeformis,* as this might suggest that the adult worm was responsible. The paragraph heading on p. 295 (Experimental peritonitis in dogs) is not elucidated. Misprints noted are on p. 168 (a "new ear in medicine") and p. 164 (a "typicle tubercle"). No reference is given to support the short account of foot and mouth disease in man (p. 379).

—E. Cotchin.

Simmons, J. S. [Professor of Public Health, Harvard University School of Public Health], Whayne, T. F. [Chief, Preventive Medicine Division, Office of the Surgeon General, United States Army], Anderson, G. W. [Mayo Professor and Director, School of Public Health, University of Minnesota.] & Horack, H. M. (1951). **Global epidemiology. A geography of disease and sanitation. Vol. 2. Africa and the adjacent islands.** pp. xl+652. Philadelphia: London: Montreal: J. B. Lippincott Company. 120s. **3939**

The series of which this is the second volume began during the second world war at the instigation of the Committee on Information of the National Research Council. The aim of the authors was to make available information collected by the Medical Intelligence Division. The first volume, on India, the Far East and the Pacific Area, was published in 1944. This second volume is a peace-time project which will be of value to workers in the fields of medicine and public health and to the international organizations.

The scope of the work does not permit consideration of veterinary topics, except in so far as animals play a part in transmitting disease to man: thus there are references to tuberculosis in cattle in East Africa, to trypanosomiasis research centres and a number of veterinary research laboratories, and to plants poisonous to livestock. Such information is scattered through the text and not easily found among the mass of material presented.

The main chapter headings include geography and climate, population and socio-economic conditions, environment and sanitation, health services and medical facilities, and diseases. Each chapter has a bibliography.

This series will serve as standard works of reference for many years to come and when complete will represent a concise and accurate summary of global medicine. The last chapter deals with health hints for the tropics and can be read with profit by all who go to these areas, whether for a short visit or permanently.

No reference library can afford to be without this series. Apart from its primary service to those concerned with human medicine, there will be many others, including veterinarians, who will enjoy browsing through it and will profit from its contents.

There are a number of maps showing the distribution of various diseases. A large coloured folding map of Africa would have been a valuable addition: perhaps it was thought that a good atlas would be at hand wherever these volumes are used.—E. G. White.

Karel, L. & Roach, E. P. [Compiled by.] (1951). **A dictionary of antibiosis.** pp. vii+373. New York: Columbia University Press. $8.50. **3940**

This very detailed and complete work furnishes an index to the great mass of literature which has appeared since penicillin first came into use. The data have been arranged alphabetically and include the substances which have been tested for antibiotic activity, information on source, extraction, chemical and physical properties, range of activity *in vitro* and *in vivo,* toxicology, pharmacology and chemical and experimental results, and also the organisms against which the antibiotic substances have been tested for activity. In addition to all this there is an excellent bibliography.

—M.C.

Anon. (1952). **The Merck index of chemicals and drugs. An encyclopedia for the chemist,**

pharmacist, physician and allied professions. pp. xiv + 1167. Rahway, N.J.: Merck & Co., Inc. 6th Edit. $7.50. 3941

This sixth edition maintains the high standard of its predecessors and amply fulfils its purpose as an encyclopaedia for chemists, pharmacists, physicians and veterinary surgeons. In addition there are many very useful tables such as equivalents of the metric and U.S. systems of weights and measures, comparison of U.S.A., Imperial and metric systems of liquid measure, the Greek alphabet, four-place logarithms and many others. An extremely useful reference book.—M.C.

HABEL, R. E. (1951). **Guide to the dissection of the cow.** pp. vi + 127. Ithaca, New York: Cornell Cooperative Society. 2nd Edit. $1.00. 3942

For the first edition of this booklet, see *V.B.* **21,** 628. This second edition differs only in minor alterations in the text and by the addition of several illustrations.—R. N. SMITH.

FERRARA, B. (1951). La determinazione dell'età negli animali domestici. [**Determination of age in animals.**] pp. 142. Naples: Edizioni Scientifiche Italiane. L. 1300. 3943

This book is a summary of present knowledge on the determination of the age of domesticated animals and birds, including horses, donkeys, mules, cattle, buffaloes, camels, sheep and goats, pigs, dogs, cats and domesticated birds. It also contains a useful list of the names applied to the animals, in Italian, at the various stages of their development. There are 94 figures.—I. W. JENNINGS.

HAYES, M. H. (1952). **Points of the horse. A treatise on the conformation, movements, breeds and evolution of the horse.** pp. xxvii + 540. London: New York: Melbourne: Sydney: Cape Town: Hurst & Blackett Ltd. 6th (Revised) Edit. 63s. 3944

This sixth edition of this well known book which was originally published in 1893 does not differ greatly from the fifth edition which appeared in 1930. Revision has been made under the guidance of Major General Geoffrey Brooke, mainly by the insertion of footnotes. The illustrations are in the main the original ones as it has not been possible to replace them by more modern ones since the author invariably referred to points outlined by his selected photographs.

The book is still a great source of information, particularly on the conformation of different types of horses in relation to the kind of work they are required to perform.—M.C.

BLOUNT, W. P. (1951). **Hen batteries.** pp. viii + 259. London: Baillière, Tindall & Cox. 15s. 3945

This book constitutes a manual on all aspects of the battery system of poultry keeping. Housing, ventilation, types of battery cages, feeding, economics and culling are dealt with in separate chapters. There are also chapters on diseases; ducks in batteries; methods used in the U.S.A.; and battery laying trials.

—M.C.

TURNER, N. (1952). **Herdsmanship. A guide for the herd owner, herdsman and cowman, on the establishment and management of a pedigree herd of dairy cattle of any breed, including the selection, breeding, feeding, preparation for show and sale, how to judge, and on-the-farm prevention and treatment of cattle diseases.** pp. 236. London: Faber and Faber Ltd. 18s. 3946

A considerable part of this book is devoted to an exposition of the author's methods of prevention and treatment of cattle diseases. These are so unorthodox as to verge on heresy. Most of the diseases are treated by fasting for periods varying from a day to a week or more and dosing with garlic, preferably garlic which has been grown on land manured with "organic" compost. Some idea of the author's approach to disease may be gathered from his remarks on abortion: "Abortion is part of the natural elimination of toxins from an overloaded system and as such is altogether beneficial to the ultimate health of the animal"—and further on: "With enlightened management and organic treatment the act of abortion becomes a healing process in the life of the animal whose subsequent health and productive ability will be wonderfully benefited as a result". Bacteria are considered to be the result of disease rather than the cause of it.

The theme of the book seems to be that if the use of chemical fertilizers is abandoned and only compost used then no disease either infectious or non-infectious will occur in cattle maintained solely on the products of land so managed. This theory seems to ignore the fact that epidemics of disease, often disastrous in their severity, occur among wild animals in areas of the world where chemical fertilizers had never been used.—M.C.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

AINSWORTH, G. C. (1952). **Medical mycology. An introduction to its problems.** pp. ix + 105. London: Sir Isaac Pitman & Sons, Ltd. 15s.

BARTON-WRIGHT, E. C. (1952). **The microbiological assay of the vitamin B-complex and amino acids.** pp. x + 179. London: Sir Isaac Pitman & Sons, Ltd. 18s.

BENNET, A. H., JUPNIK, H., OSTERBERG, H. & RICHARDS, O. W. (1951). **Phase microscopy. Principles and applications.** pp. xiii + 320. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 60s.

BODDIE, G. F. (1952). **Introduction to veterinary therapeutics.** pp. xii + 196. Edinburgh & London: Oliver and Boyd, Ltd. 15s.

BULLOUGH, W. S. (1951). **Vertebrate sexual cycles.** pp. viii + 117. London: Methuen & Co. Ltd.; New York: John Wiley & Sons, Inc. 6s.

CLARE, N. T. (1952). **Photosensitization in diseases of domestic animals.** pp. 58. Farnham Royal, Nr. Slough: Commonwealth Agricultural Bureaux: Review Series No. 3 of the Commonwealth Bureau of Animal Health. 7s. 6d.

DALCQ, A. (1952). Initiation à l'embryologie générale. [**Introduction to general embryology.**] pp. 122. Paris: Masson & Cie. Fr. 920.

KALLÓS, P. (Edited by). (1952). **Progress in allergy. Vol. III.** pp. 572. Basle & New York: S. Karger. [In English]. Swiss Fr. 58.65.

LANGERON, M. Revised by VANBREUSEGHEM, R. (1952). Précis de mycologie. Mycologie générale, mycologie humaine et animale. Techniques. [**Mycology. General mycology, human and veterinary mycology. Techniques.**] pp. viii + 703. Paris: Masson et Cie. 2nd Revised Edit. Fr. 4800.

LUCK, J. M., LORING, H. S. & MACKINNEY, G. (Edited by). (1952). **Annual review of biochemistry. Vol. 21.** pp. ix + 781. Stanford, California: Annual Reviews, Inc.; London: H. K. Lewis & Co. Ltd. $6.00.

NEWSOM, I. E. (1952). **Sheep diseases.** pp. ix + 352. London: Baillière, Tindall & Cox, Ltd. 54s.

RAGAN, C. (Edited by). (1952). **Connective tissues. Transactions of the third Conference, February 14-15, 1952, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 166. New York: Josiah Macy, Jr. Foundation. $3.50.

SACK, H. (1951). Das Phäochromozytom. [**Tumours of the adrenal medulla. Phaochromocytoma.**] pp. viii + 93. Stuttgart: Georg Thieme. DM. 11.70.

SCORGIE, N. J. & WILLIS, G. A. (1952). **Linton's veterinary hygiene.** pp. xii + 458. Edinburgh: W. Green & Son Ltd. 4th Edit. 60s.

THORNTON, H. (1952). **Textbook of meat inspection. Including the inspection of rabbits, poultry and fish.** pp. viii + 646. London: Baillière, Tindall & Cox. 2nd Edit. 55s.

TRAUTMANN, A. & FIEBIGER, J. (Translated & Revised by HABEL, R. E. & BIBERSTEIN, E. L.) (1952). **Fundamentals of the histology of domestic animals.** pp. xiii + 426. London: Baillière, Tindall & Cox. 67s. 6d.

WEST, L. S. (1951). **The housefly. Its natural history, medical importance, and control.** pp. xi + 584. New York: Comstock Publishing Company, Inc.; London: Constable & Co. Ltd. 63s.

ANON. (1952). **The extra pharmacopoeia. (Martindale). Vol. I. Incorporating Squire's Companion.** pp. xxii + 1352. London: The Pharmaceutical Press. 23rd Edit. 55s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

The latest list of the publications searched for this purpose was circulated with the *Veterinary Bulletin,* Vol. 22, No. 1.

About 10,000 references are indexed each year, each reference being suitably cross-indexed alphabetically under subjects and under names of authors.

As each issue consists of a single complete alphabetical index of subjects and authors' names, a search through it involves a minimum of trouble, and all information required is readily found.

There has been a break in the issues since the production of Vol. 14 (1946). The production of Vols. 15, 16 and 17 has been delayed for the present. Vol. 18 (two half-yearly parts) and the first two (quarterly) issues of Vol. 19 have been issued. The remaining quarterly issues of Vol. 19 will appear very shortly.

Stocks of Vols. 4, 5, 13 and 14 are available: price £5 per volume. Other volumes incomplete : details on request.

Orders may be sent to: Central Sales Branch (Commonwealth Agricultural Bureaux), Farnham House, Farnham Royal, Nr. Slough, Bucks.

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by

N. T. CLARE, M.Sc.

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